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ARA
ISLAS
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ARA ISLAS ORCADAS CRUISE 1578 SEDIMENT DESCRIPTIONS

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CONTRIBUTION No. 48
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COVER: ARA ISLAS ORCADAS
cruise 1578 trigger cores
undergoing curation at 2°C.
(Photography by Thomas J.
Fellers.)

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INTRODUCTION

The purpose of this volume, the tenth in a series of similar publications (Goodell, 1964, 1965, 1968; Frakes, 1971, 1973; Cassidy et al., 1977a, 1977b; Kaharoeddin, 1978; Kaharoeddin et al., 1979), is to continue a presentation to the research community of sediment core descriptions and attendant data of cored and otherwise obtained sediments retrieved in waters of the Southern Ocean aboard the research vessel, ARA ISLAS ORCADAS (formerly, USNS ELTANIN), as a part of the circumpolar survey begun by ELTANIN in 1962 (see issue of Antarctic Journal of the United States, Vol. 8, No. 3, 1973).

The data presented herein are concerned with the results of coring activities aboard cruise 1578 of ISLAS ORCADAS, the fourth marine geology coring cruise of this vessel sponsored under the terms of a joint Republic of Argentina-United States agreement (now terminated), and have been organized in format similar to that of the previous volumes of ISLAS ORCADAS core descriptions (Cassidy et al., 1977b; Kaharoeddin, 1978; Kaharoeddin et al., 1979). These data include 1) a brief summary of the coring objectives of the cruise, together with a discussion of core recovery; 2) tables and maps of station location data for materials retrieved; 3) a table of tentative age dates for each piston core; 4) an explanation of the laboratory procedures and descriptive criteria used in the description of the sediments, and 5) the lithologic descriptions of the core sediments recovered aboard the cruise.

As necessitated by the character of the sediments recovered aboard cruise 1578, several modifications have been made to the scheme of sediment classification used for previous volumes. These, and other minor modifications, are discussed within the appropriate sections of this volume.

A total of 328.98 meters of liner-encased core sediment, recovered by 140 cores (51 piston cores; 68 trigger cores; 21 Phleger cores), is described in this volume (piston cores = 288.08 m; trigger cores = 34.4 m; Phleger cores = 6.8 m). Also described are the bagged sediments recovered by an additional 19 coring attempts (7 piston cores; 6 trigger cores; 6 Phleger cores). Piston core sediments described herein are 5.17% disturbed due to flow-in with respect to total core length, as compared to 30.85%, 3.16%, and 11.08%, for cruises 1277, 1176, and 0775, respectively.

The final volume of core descriptions in this series, which will cover the sediments retrieved aboard cruise 1678 of ISLAS ORCADAS, is expected to be completed at about the end of the 1981 calendar year. Preliminary descriptive information concerning the cruise 1678 cores will be furnished upon request as it becomes available.

ACKNOWLEDGEMENTS

The editor and authors are extremely grateful to the many persons whose contributions were essential to the completion of this volume of core descriptions. Appropriately, the first words of acknowledgement belong to John L. La Breque of the Lamont-Doherty Geological Observatory for his efforts in furnishing us with the water depths of coring sites at which the Phleger cores were recovered. The significance of his cooperation in doing this for us is rendered more meaningful when it is mentioned that several attempts were made for more than a year to obtain these data from various persons who were in a position to furnish it, but to no avail. Upon learning of our difficulties, John offered to help. This was particularly important to our being able to present a complete record of coring, because in only three cases did the ship's record (Daily Data Sheets) provide a water depth corresponding to the latitude, longitude, and "hit time" of the Phleger coring event. Interpolation of these depths from known events prior to and following the coring event was a clearly unacceptable alternative, because it required an assumption of constant slope under topographic conditions which obviously were not constant in slope. Our concern for definitive water depths was even more urgent since many Phleger core tops were sampled aboard ship by cruise participants who did not have precise station location data. From the curatorial point of view, it is considered essential that subsequent publication of research results upon these samples be uniform with respect to these data.

La Breque, who served as Chief Scientist aboard the cruise, also is thanked for providing us with a manuscript summary of the cruise objectives - an edited version of which appears in this volume.

John G. Hattner served as the Florida State University coring representative aboard cruise 1578. His participation in the program was funded by National Science Foundation grant

DPP 77-19360 to Sherwood W. Wise, Jr. (Florida State University). Anthony Socci and Roy J. Redmond served for a limited time during laboratory procedures involving core-describing. Their help is appreciated.

Thomas J. Fellers handled the photography, with Fellers and David Harwood assisting in proofreading. All typing was accomplished by Louise M. Cox, and Rosemarie K. Raymond did the drafting.

Project funding in support of the curatorial program has been provided by Division of Polar Programs, National Science Foundation contract, DPP 75-19723, to George W. DeVore (Florida State University).

ISLAS ORCADAS CRUISE 1578

Cruise Objectives

Cruise 1578 of ARA ISLAS ORCADAS was the fourth multidisciplinary cruise of this vessel from which cores were received by the Antarctic Research Facility. Beginning and ending at Buenos Aires, Argentina, the cruise spanned 55 days from mid-January to early March, 1978. Figures 1 and 2 show the area covered by the coring operation. A detailed summary of the cruise and its accomplishments has been documented by La Brecque et al. (1980). For the convenience of those using this volume of core descriptions, the text of their article has been reproduced herein, as follows:*

> "Between 9 January and 4 March 1978, ISLAS ORCADAS cruise 1578 carried out a multidisciplinary reconnaissance of the ice-free portion of the Weddell Sea, central and eastern Scotia Sea, and the southernmost south Atlantic as well as a preliminary survey of the Caird Coast margin.
>
> Geophysics (Lamont-Doherty Geological Observatory). ISLAS ORCADAS 1578 gathered over 8,000 miles of continuous geophysical data, including magnetic, bathymetric, seismic reflection, and gravimetric measurements. Nine seismic refraction (sonobuoy) experiments, six on the Caird margin and three within the Weddell Basin, were conducted.
>
> The transit to the northwestern Dronning Maud Land margin was planned to incorporate a further study of the magnetic pattern north of the Shag Rocks Fracture Zone and minisurveys of the American-Antarctic Ridge to study the bathymetric and magnetic anomaly fabric of the region. These bathymetric data have been included in a revised bathymetric map of the Indo-Atlantic Basin (La Brecque and Rabinowitz, in press). Three traverses of the margin were accomplished with geophysical instrumentation functioning. The traverses were retraced with high-density coring and conductivity-temperature-depth (CTD) stations, thereby directly sampling the seismic profiles in detail. Four unreversed refraction profiles (sonobuoys) and one reversed profile were also taken on the margin.
>
> Preliminary analysis of the continental margin traverses reveals that the Caird Coast margin structure may be dominated by a thick sedimentary basin (greater than 2 kilometers of sediment) ponded behind an apparently ridge-like structure which parallels the margin in a northeasterly direction.
>
> Penetration to the southern Weddell Sea was limited to 72°15'S, 35°W because of severe pack ice.
>
> Three major transects of the Weddell Sea were carried out following the continental shelf study. The transects were planned to complement the data gathered on ISLAS ORCADAS cruise 1277. The sediment reflection characteristics observed on cruise 1277 and attributed to turbidite deposits (Gordon and La Brecque, 1977; La Brecque and Keller, in press) were found to prevail throughout the Weddell Basin area studied. Preliminary studies of many cores obtained during cruise 1578 also indicate graded sedimentary deposits reminiscent of turbidite deposits. Magnetic anomaly lineations observed on the two cruises have been correlated with the Mesozoic magnetic reversal pattern (La Brecque and Barker, in press).
>
> Physical Oceanography (Lamont-Doherty Geological Observatory). The physical oceanography program for ISLAS ORCADAS cruise 1578 was to provide a general hydrographic survey of the Weddell Basin, by stations distributed along two transects approximately in north-south directions employing a Neil Brown CTD equipped with an oxygen sensor and a General Oceanics 24-bottle rossette. We were able to obtain three lines of stations, including two traverses of the antarctic continental margin which took us to 200 fathoms of water within a few hundred meters of the ice shelf. In addition to the Weddell Sea stations, five stations were taken in the Argentine Basin and Scotia Sea. In all we obtained 51 CTD stations and 93 expendable bathythermograph (XBT) measurements.

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*NOTE: references to the two figures and one table appearing in the original article have been intentionally deleted, since these have not been included in this volume. For reference to them, the reader is referred to the issue of the Antarctic Journal of the United States in which they appear.)

XBT's were taken between the stations along two of the easternmost Weddell transects and during the two crossings of the polar front. These were accompanied by surface bucket samples for temperature, salinity, and silicate. Rossette water samples were analyzed for salinity, oxygen, silicate, and phosphate. (See also, Gordon, 1978; Gordon et al., in press).

Marine Geology (Rice University, University of California-Hayward, Florida State University, and University of Rhode Island). A total of 60 geologic stations were completed during ISLAS ORCADAS cruise 1578. In addition to completing the remaining portion of the circumpolar survey in the vicinity of the northeastern Weddell Sea, piston cores were obtained at a number of sites to complement ongoing research programs. Biostratigraphic summaries of these cores are available in Ciesielski and Jones, 1979.

Five cores were taken along a 2,700-kilometer traverse extending east of the South Sandwich Islands. These cores will be examined at the University of Rhode Island by geologists interested in the explosive history of the South Sandwich volcanic chain.

Both traverses brought us to within a few hundred meters of the northeastern Weddell Sea ice shelf (between 10° and 20°W); 19 piston coring stations were selected on the basis of continuous seismic reflection profiles. This relatively small segment of the antarctic continental margin is characterized by major differences in tectonic setting, and consequently, in sediment distribution patterns.

Along the 10°W traverse we observed a very irregular tectonic margin with very narrow continental shelf, similar in many respects to the California borderland. Sediments in this region consist, for the most part, of gravelly debris flows and turbidites while a few clayey deposits, probably older materials, are exposed along the lower slope-rise.

We suspect that this portion of the margin may have been the source area for a large (1,200,000 square kilometers) turbidite fan that occupies the entire northeastern Weddell Basin. The high mineralogic and textural maturity of the sands within this fan suggest a preglacial source.

The shelf broadens southward and the adjacent slope-rise is well sedimented with silts and clays, reflecting the more passive nature of this section of the margin compared with that to the north (Anderson et al., in press; Anderson et al., 1979; Anderson et al; 1980; Wright, 1980).

Geothermal (Massachusetts Institute of Technology). A total of 31 heat flow measurements were taken. The objective of the program was to obtain heat flow values within the Weddell abyssal plain and Scotia Sea. The data are examined in a study of basement age and bottom-current flow. (Zlotnicki et al., 1980).

The rather hard sediment cover (possibly turbidites) in the Weddell Basin made coring extremely difficult and limited penetration. Therefore many heat flow stations produced marginal results. In spite of these problems, approximately 50 percent of the stations are recoverable and will yield the first heat flow results from the Weddell Sea.

Ancillary Programs. Several other sampling programs were carried out during cruise 1578. Ancillary programs led by J. Anderson included vertical plankton tows through the upper 30 meters of the water column at 16 stations between 48°S and 72°S for Richard Casey of Rice University. Casey's research concerns the ecology and distribution of living radiolaria.

Ancillary programs conducted by A. F. Amos included:

1. Marine proteins. An attempt was made to collect a trigger core using a modified Phleger core suspended 5 meters below the CTD. Each core obtained was subsampled at the surface and the bottom. These samples were stored frozen in plastic bags, to be analyzed for protein content back at the Port Aransas Marine Laboratory.

2. Plankton samples. Wherever possible, vertical plankton tows were made on station in the upper 30 meters of the water column. In daylight, Secchi disk lowerings were made at each plankton station. Analysis of the composition of the plankton in the upper water layers will help in understanding the contribution that different organisms make to the particulate protein nitrogen content measured at each station.

3. Bird observations. A. F. Amos observed birds at least twice a day throughout the cruise and attempted to spend 1/2 hour on each observation. Observations were made from both the ship's bow and the fantail (for ship-followers).

4. Other samples. A piece of ice was collected in the vicinity of a green iceberg; it is believed to be representative of the green ice that was seen on several icebergs in the Weddell Sea. The sample was transported to the Port Aransas Marine Laboratory in the frozen shipment for analysis (Amos, 1978). Samples of benthic organisms were collected on the antarctic continental shelf from an otter trawl and will be returned to the Port Aransas Marine Laboratory."

No bottom photographs were taken on this cruise.

Core Recovery

A total of 51 complete piston cores were recovered aboard ARA ISLAS ORCADAS cruise 1578 by means of a modified Ewing piston corer using plastic liners. ("Complete" is defined herein to mean that a sample removed from these cores can be assigned an absolute interval value with respect to its distance down-core from the top, or 0 cm, end of the core.) Seven other piston coring attempts, although unsuccessful in the recovery of liner-encased cores, did manage to obtain sediments lodged in the core cutter and/or catcher, or sediments which, for a variety of reasons, required being extruded and bagged aboard ship. (Piston core 17, for example, suffered severe damage to the core barrel and the core liner, necessitating makeshift removal and bagging of the recovered sediments. See page 152 for the description of this core.) Descriptions of bagged sediments are included in this volume in the interest of publicizing their availability for sampling.

The recovery of duplicate trigger cores was attempted for the first time during any of the five coring cruises of ARA ISLAS ORCADAS. This was accomplished by rigging the trigger wire of the main coring apparatus (the piston corer) with a yoke from which two trigger corers were suspended, separated by a distance of approximately 20 cm. Duplicate trigger cores recovered at a single coring station have been designated as either A or B (table 1). A total of 68 complete trigger cores were recovered aboard the cruise. Trigger core sediments, including bagged sediments recovered by 6 coring attempts, are described according to the same criteria used for the description of the piston cores.

All latitudes, longitudes, and water depths given for the trigger cores correspond to those of the piston cores with which they are associated. Also, piston and trigger core numbers correspond to ship station numbers.

An additional coring feature aboard cruise 1578 was the recovery of Phleger cores. Twenty-one complete Phleger cores, and six others requiring bagging, were recovered. (Sediments recovered by three other Phleger coring attempts are not included in these totals, as they were not received by FSU.) The cores were collected using a modified Phleger corer suspended 5 meters below the CTD sensor, and carrying a head weight of approximately 10 pounds. Some Phleger cores were recovered at ship stations involving piston coring, whereas others were recovered at separate coring stations. The FSU Phleger core number, which is the core number to be used for the purpose of submitting sample requests, is the same as that of the ship station number. Criteria for their description are the same as those used for the piston and trigger cores. Further information concerning Phleger core recovery is presented by the comments preceeding the descriptions of these cores (page 138).

Table 1 lists core numbers, and latitude, longitude, length, and water depth of the piston and trigger cores. Table 2 lists similar data for the Phleger cores. With respect to these data, it should be noted that assignments for latitude, longitude, and water depth of the piston and trigger cores are not based on position data from PDR (Precision Depth Recorder) "hit" times of the coring apparatus, but instead, on the position of the vessel at the time of beginning of the descent of the coring apparatus (as determined from the computer output of the ship's Daily Data Sheets). This is done under the assumption that the initial descent of the coring rig was probably more directly over the point of bottom contact of the corer than would be the ship at "hit" time. During the descent, the ship may drift considerably; however, rapid "paying out" of the cable during drift time allows for a more or less vertical descent of the coring apparatus beneath the original ship position, with the trajectory of the cable being that of a long, sweeping arc from ship to point of bottom contact. Therefore, the fathometer reading at "hit" time indicates water depth under the ship, and not necessarily at the coring point. This assumption may not be valid in the case of the Phleger cores; therefore, location data for these cores correspond to the "hit" times of the CTD event.

Water depths, recorded in fathoms and converted to meters by a x 1.8288 conversion factor, are uncorrected depths; i.e., they have not been corrected by use of Matthews corrections tables (Matthews, 1939).

Core Shipment and Handling

All cores retrieved aboard ARA ISLAS ORCADAS cruise 1578 were required to be stored, shipped, and kept frozen until arrangements could be made for a principal investigator to be present during opening of the cores at the Antarctic Research Facility, at which time sampling control could be established for research needs involving organic geochemistry.

As had been predicted, freezing of the cores was to present a host of difficulties in core-opening and core-describing--difficulties which contributed significantly to the delay of final publication of this volume, and which are worthy of some discussion.

Upon extrusion aboard ship from the steel core barrel, the cellulose acetate butyrate (CAB) plastic sections of core liner are capped at their ends with a No. 2 1/2 SC plastic Caplug. These caps are then taped to the core liner using vinyl electrical tape. Water-laden sediment within the core liner, upon freezing, expanded considerably. In the event that the end caps were firmly taped, expansion resulted in thorough bursting, splitting, and splintering of the frozen, brittle, core liner. In these cases, it was necessary to spirally tape each core section along its entire length (while still frozen) with vinyl tape in order to hold the splintered liner together during cutting. (Complete defrosting of a core section is required for cutting, since CAB, when frozen, splinters further upon contact with the saw blade.)

Sediments from almost all core sections processed in this manner were required to be transferred, with utmost care and in short sections, to locally-obtained, split lengths of polyvinyl chloride (PVC) tubing, since the fractured liners, even when taped, were incapable of supporting their own weight.

In those cases where the end caps were not too firmly taped, expansion of the sediment resulted in "plugs" of sediment protruding from both ends of the liner, often as much as 6 cm. Prior to defrosting of the cores, these "plugs" were cut off, bagged and labeled, and were, of course, taken into account during measurement of the total core length. Some cores both pushed out "plugs" and splintered.

Core-freezing also renders the sediment more difficult to describe in that expansion due to freezing (such as by the clays) often disturbs many of the primary structures. These, and other disturbances, are discussed in more detail in the chapter concerning sediment description criteria.

Cores are cut using an adjustable, track-operated, overhead, radial power saw (Cassidy and DeVore, 1973). A core is manually split after the saw cuts through only the thickness of the plastic core liner, on opposite sides. Following description and sampling, the two half-sections of core are heated-sealed in polyethylene "sleeving" to prevent dessication and then returned to refrigerated storage (2°C).

TABLE 1

STATION LOCATIONS, CORRESPONDING WATER DEPTHS, AND CORE RECOVERY FOR ARA ISLAS ORCADAS CRUISE 1578 PISTON AND TRIGGER CORES

Core Number	Latitude(S)	Longitude(W)	Water Depth(m)	Core Length (cm): PC	TC(A)	TC(B)
2	58°16.2'	28°38.9'	3246	360	52	NR
4	59°13.8'	19°43.6'	4217	953	NR	NR
5	59°48.0'	13°28.7'	3968	556	70	NR
6	59°29.2'	09°51.2'	4283	641	74	NR
7	60°00.4'	06°45.5'	5214	788	25	NR
8	60°33.3'	03°38.5'	5130	896	69	NR
9	61°57.3'	03°34.5'	5201	362	78	NR
10	63°32.1'	06°26.7'	5128	66	NR	NR
11	64°58.7'	07°27.1'	4987	249	56	NR
12	66°58.9'	07°45.2'	4806	397	66	NR
14	68°41.8'	10°13.5'	4256	357	66	50
16	70°36.7'	10°03.8'	366	140	BAG	NR
17	70°34.1'	10°04.5'	700	BAG	NR	NR
18	70°33.6'	10°10.9'	1039	131	NR	NR
19	70°32.4'	10°16.4'	1339	499	12	6
20	70°28.3'	10°23.0'	1734	19	50	29
21	70°15.8'	10°39.1'	2222	BAG	NR	NR
22	69°55.1'	10°57.8'	2820	512	36	34
24	69°58.2'	12°17.0'	4078	1068	BAG	NR
25	71°01.3'	18°16.0'	4440	1013	49	53
26	71°54.1'	17°15.6'	2242	1135	33	10
27	72°24.5'	19°25.1'	3274	929	51	52
28	72°11.4'	15°18.3'	530	260	58	NR
29	72°09.1'	15°31.8'	380	241	NR	NR
30	71°58.9'	16°12.6'	530	145	BAG	NR
31	71°58.6'	16°18.6'	810	242	NR	NR
32	71°58.1'	16°29.6'	1061	87	NR	NR
33	71°55.6'	16°43.1'	1536	521	62	NR
34	71°54.0'	16°55.9'	1865	1045	65	60
35	71°51.5'	17°10.2'	2350	1143	21	9
36	71°46.6'	17°31.1'	2751	802	59	53
37	71°31.6'	18°07.5'	3681	1139	52	47
38	71°14.2'	19°08.8'	4301	486	22	25
39	70°39.4'	21°34.6'	4334	796	45	68
40	69°58.9'	26°02.2'	4481	1070	67	62
41	69°00.5'	24°46.6'	4631	471	65	66
42	67°59.3'	23°26.1'	4746	848	66	40
43	67°00.3'	22°07.1'	4812	88	64	66
44	66°00.9'	20°53.4'	4857	296	37	26
45	64°54.5'	19°58.3'	4898	500	69	69
47	63°09.2'	20°08.9'	4890	186	49	48
47A	62°59.5'	19°46.8'	4855	900	73	56
48	61°59.7'	20°00.3'	4890	933	58	68
49	61°05.6'	19°51.9'	4718	940	73	70
50	64°57.5'	24°21.0'	4852	824	56	69
51	68°00.8'	29°51.4'	4563	BAG	BAG	BAG
52	66°16.0'	33°04.1'	4649	351	67	NR
53	64°58.0'	35°16.6'	4733	BAG	BAG	NR
53A	64°57.7'	35°19.9'	4731	BAG	35	NR
54	64°48.1'	35°43.9'	4729	BAG	81	NR
54A	64°42.5'	36°06.3'	4724	BAG	30	NR
55	64°02.8'	36°58.0'	4353	515	NR	NR
56	63°05.8'	38°27.6'	4512	814	56	50
59	60°33.6'	40°13.2'	2707	385	21	NR
61	58°00.1'	41°00.2'	3438	171	NR	NR
62	57°00.1'	41°01.1'	3420	568	55	NR
63	56°01.7'	41°09.7'	3091	497	28	NR
64	55°39.5'	41°10.0'	3420	473	33	NR

NR = No Recovery
PC = Piston Core
BAG = Bag Sample (see explanation in text, page 5)
TC = Trigger Core

Table 1 is intended to be used with reference to the location map for piston and trigger cores (figure 1), the core descriptions, and the discussion of core recovery aboard cruise 1578 (page 5). This approach will insure a knowledgeable evaluation of the data presented herein for the purpose of submitting sample requests.

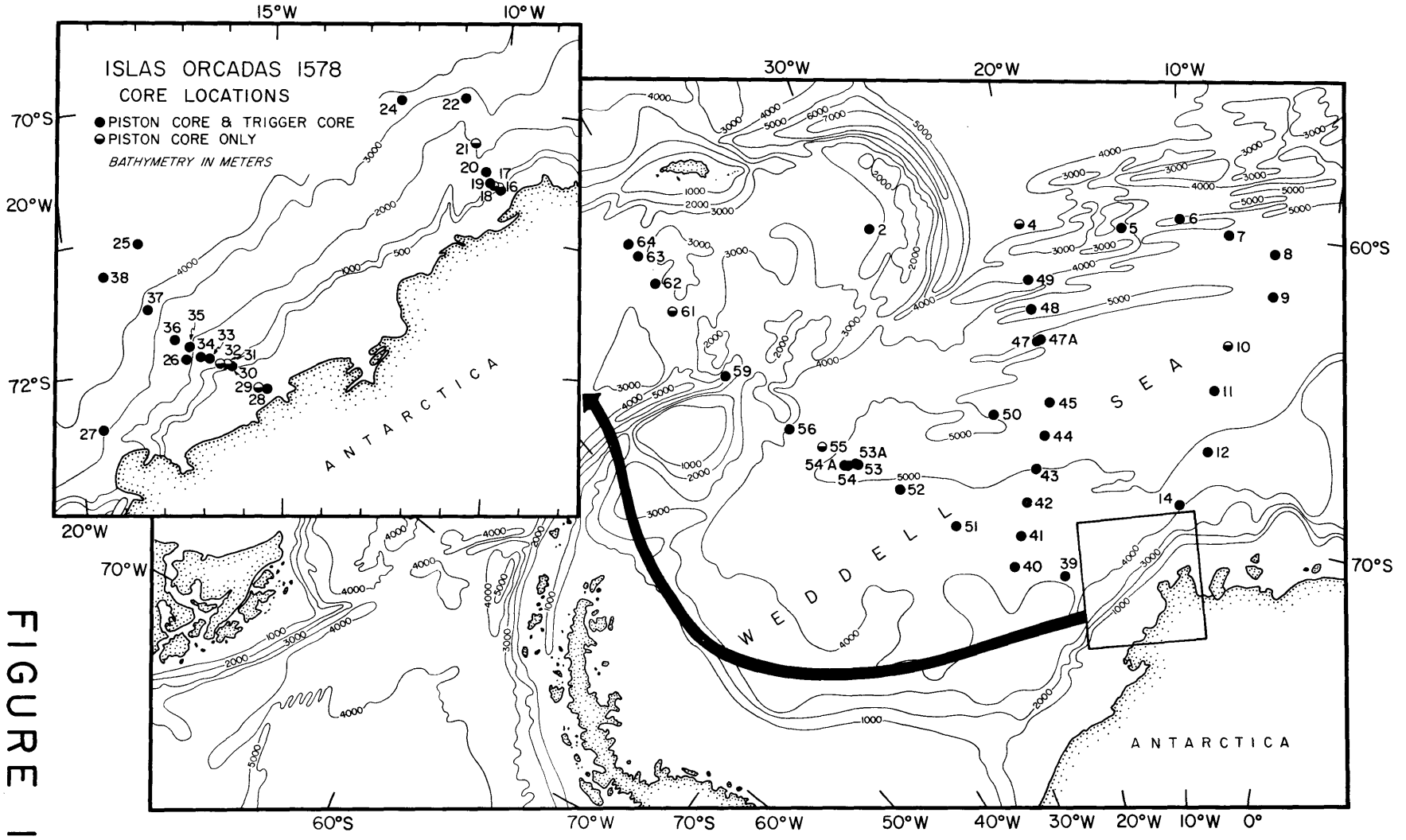
ISLAS ORCADAS 1578
CORE LOCATIONS
PISTON CORE & TRIGGER CORE
PISTON CORE ONLY
BATHYMETRY IN METERS
15°W
10°W
70°S
20°W
72°S
ANTARCTICA
30°W
20°W
10°W
60°S
70°S
WEDDELL SEA
ANTARCTICA
70°W
60°S
50°W
40°W
0°

FIGURE 1

TABLE 2

STATION LOCATIONS, CORRESPONDING WATER DEPTHS, AND CORE RECOVERY FOR ARA ISLAS ORCADAS CRUISE 1578 PHLEGER CORES

FSU Core Number*	AMOS Core Number**	CTD Number***	Latitude(S)	Longitude(W)	Water Depth(m)	Phleger Core Length(cm)
1	1	127	47°35.8'	53°06.0'	5889	34
2	2	128	58°15.4'	28°39.1'	3264	12
4	3	130	59°14.6'	19°42.7'	4214	BAG
6	4	131	59°29.7'	09°52.0'	4285	21
11	5	135	64°58.6'	07°30.0'	4971	59
12	6	136	66°59.4'	07°47.0'	4804	32
15	7	138	69°18.2'	10°14.8'	3775	44
19	8	142	70°32.4'	10°16.7'	1244	13
20	9	143	70°28.2'	10°21.5'	1737	10
21	10	144	70°16.3'	10°41.1'	2191	56
26	13	147	71°54.6'	17°20.0'	2264	BAG
36	15	153	71°45.7'	17°33.6'	2771	BAG
37	16	154	71°32.4'	18°06.8'	3720	BAG
39	17	155	70°38.0'	21°32.3'	4345	19
40	18	156	69°56.1'	26°01.4'	4486	64
41	19	157	68°58.9'	24°46.4'	4631	71
42	20	158	67°58.4'	23°22.6"	4746	45
43	21	159	66°59.2'	22°00.9'	4813	30
45	22	161	64°56.1'	19°56.6'	4898	BAG
49	24	165	61°06.4'	19°48.2'	4791	BAG
51	25	166	68°01.3'	29°49.1'	4563	29
52	26	167	66°16.1'	33°06.6'	4645	41
53	27	168	64°57.9'	35°18.1'	4733	22
55	28	169	64°02.2'	37°00.3'	4603	19
56	29	170	63°07.6'	38°24.5'	4404	10
57	30	171	61°57.1'	39°56.5'	3387	31
60	31	173	58°58.2'	40°55.3'	3383	18

*The FSU core number corresponds to the ship station number.

**The AMOS core number is a core number assigned by the principal investigator, Anthony F. Amos, for whom these cores were taken.

***The cores were obtained using a modified Phleger corer suspended 5 meters below the CTD sensor. CTD numbers have been included in the table for reference.

BAG = Bag Sample

Table 2 is intended to be used with reference to the location map for Phleger cores (figure 2), the core descriptions, and the discussion of core recovery aboard cruise 1578 (page 5). This approach will insure a knowledgeable evaluation of the data presented herein for the purpose of submitting sample requests. (See page 138 for additional information concerning Phleger core recovery.)

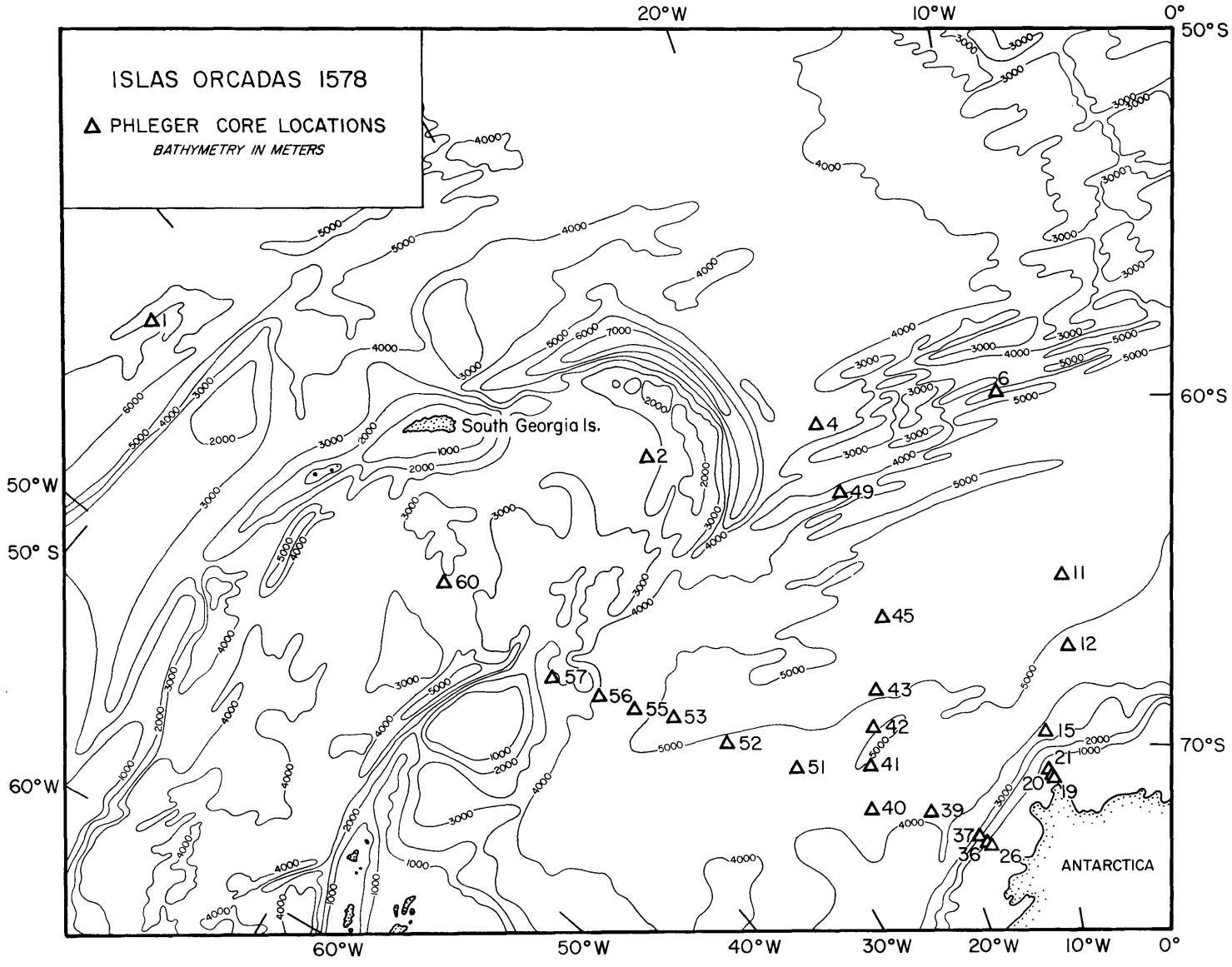
ISLAS ORCADAS 1578
Δ PHLEGER CORE LOCATIONS
BATHYMETRY IN METERS
South Georgia Is.
ANTARCTICA
20°W
10°W
0°
50°S
60°S
70°S
50°W
50° S
60°W
60°W
50°W
40°W
30°W
20°W
10°W
0°
Δ1
Δ2
Δ4
Δ6
Δ49
Δ60
Δ11
Δ45
Δ12
Δ57
Δ56
Δ55
Δ53
Δ43
Δ42
Δ52
Δ51
Δ41
Δ15
Δ21
Δ20
Δ19
Δ40
Δ39
Δ37
Δ36
Δ26

FIGURE 2

CORE DESCRIBING PROCEDURES

General Information

Procedures used for describing the cores listed in this volume are similar to those used for the describing of cores from ARA ISLAS ORCADAS cruise 1277 (Kaharoeddin et al., 1979). A few minor modifications have been necessary, particularly to the core preparation procedure and the methods of smear slide analysis, and these are discussed in this chapter. As in the past, estimations of the compositional percentages of fine grain sediments are based on smear slide analyses. These analyses have proven to be adequate for most sediments collected aboard previous cruises of ISLAS ORCADAS; however, for sediments with abundant coarse fractions, such as the many glacial-marine sediments retrieved aboard cruise 1578, the smear slide analyses must be supplemented by frequent megascopic examination of the coarse particles, separated by wet sieving, or observed in situ.

For obvious reasons, cores should be described immediately after being opened. All piston cores listed in this volume, however, were described several months after being opened and sampled at the request of investigators requiring immediate access to the cores. (Opening and sampling of the cruise 1578 cores took place while the description of cruise 1277 cores was in progress.) Moisture loss was minimized by the careful handling, sealing, and storing of the cores following sampling. Prior to the describing of the extensively sampled cores, a thin film of exposed sediment was scraped off their surfaces so that the original sediment color could be determined.

The description of each core consists of three types of information:

1. The primary information (latitude, longitude, water depth, core length, the statement of bottom topography;

2. The main lithologic description (megascopic descriptions and smear slide analyses), and

3. Information concerning core conditions that are not inherent to the lithologic character of the sediments.

Most of the primary information is obtained from the deck-log and the ship's daily data sheets (ship-log), except core length, which is measured by the core describers. Core conditions not inherent to the lithologic character of the sediments are noted in the description and include the following: the loss of a core section and an estimate of its length (e.g. piston core 1578-48); bagged core sediments which must be taken into account for core length determination (e.g. piston core 1578-9). Conditions which seriously affect both the core description and the value of the sediment for sampling are mentioned at the beginning of the description; those which are not critical to the description may appear at the end of the description. Occasionally, smear slides are biased toward the fine fractions, and this information is noted within the description of the unit.

Each piston core description is accompanied by a graphic log illustrating the main lithologies, boundaries, inclusions, sedimentary structures, and degrees of disturbances of the sedimentary units. The positions of the core section breaks are also indicated in the log in order to inform the investigator as to where samples should not be taken, since the cutting of cores into sections produces sediment disturbance. Not all information appearing in the written portion of the lithologic description is illustrated in the log. An attempt was made to place the lithologic log and the lithologic description of each sedimentary unit on the same page in order to facilitate the use of this volume. If necessary, the scale of the log was changed at appropriate depths.

The style of description for all trigger cores, Phleger cores, and bagged samples is basically the same as that of the piston core descriptions, but with minor differences. These differences are:

1. The graphic log is omitted from the trigger core and Phleger core descriptions, and

2. The weight of each bagged sample is included in its description as an aid in identifying the amount of sediment available for sampling.

In a few cases, a bagged trigger core sample represents surface sediment that was forced up into the head weight assembly of the coring apparatus during penetration, and therefore not enclosed within the core liner. The lengths of these bagged sediments were estimated and then added to the tops of the trigger cores. The method used to estimate the length of a bagged sample is explained, below.

Core Preparation Procedure

Sediments recovered by ISLAS ORCADAS cruise 1578 are in the form of piston cores, trigger cores, Phleger cores, and bagged sediments. A considerable number of the bagged sediments are derived from the ends of piston core sections. The true lengths of these bagged sediments were estimated by molding them into a cylinder the size of the core liner, and then measuring the height of the cylinder to the nearest centimeter. The same method is used to estimate the length of the trigger and Phleger core bag samples.

Although only nine piston cores were required to be shipped, stored, and maintained at below freezing temperatures until they could be sampled under semi-sterile laboratory conditions, all cores were received frozen, and remained so for several weeks prior to being opened. Of these nine cores, those with shattered liners (see discussion under "Core Shipment and Handling", page 5) were cut, while still frozen, into short sections with a hacksaw, with each of these sections being cut longitudinally into halves with a diamond-bladed slab saw (no lubricant, or cutting-fluid, was used). The sediment from the cut, shattered core liners was then transferred to new liners. The remaining cores were thawed and then cut (although several cores did not thaw completely prior to being cut, and thus required being split while still frozen). Any introduced sediment disturbances resulting from the above procedures have been noted in the core description.

Initial preparation of the cores for description begins with cutting of the core liners. Following cutting, the sediment is manually split into two halves by the pulling of a stainless steel wire between the liner halves. The surfaces of each half are cleaned of plastic debris, and then scraped perpendicular to the core axis with a stainless steel spatula in order to expose the internal structures of the sediment. By studying these structures, disturbance of the sediment due to flow-in usually can be distinguished from disturbances caused by moderate washing, although sediments disturbed in either manner can exhibit vertical striations. Since samples may be taken from a core prior to its description, flow-in and other disturbances are recorded immediately after the core is opened.

Both core halves are tagged every 20 cm, with the estimated lengths of existing bagged sediments being taken into account. The error in a depth tag's position below a bagged portion of the core sediment is about 10% of the estimated length of the bagged sediment. For example, a bagged sample estimated to be 4 cm in length, and originating from just below 450 cm, would create a maximum error of ± 4 mm in the position of all depth tags below 450 cm.

Megascopic Examination and Description

The elements of description of each unit are presented in the following order: the upper and lower boundaries of the unit in centimeters, sediment name and color code, observable distribution of volcanic ash and manganese and/or ferrous micronodules and staining, internal structures within the unit (zone, layer, lamina, stringer, cast), inclusions (sedimentary clasts, pebbles, lapilli and breccia, manganese nodules), bioturbation, operational disturbances due to the coring operation and transportation, and the nature of the bottom contact of the unit. The description is followed by smear slide analyses as representative as possible of the unit.

Lithologic units were defined on the basis of compositional, textural, and other sedimentological characteristics, and have been named according to the classification system described in the next chapter. Almost all units can be classified with this system. Only in piston core 1578-33 does a single unit comprise more than one lithology. For example, the unit between 163-193 cm has been named a "mixture of sedimentary clasts of various lithologies", and these clasts occur in a subdominant matrix of mud. Another unit in this core (193-332 cm) consists of intermixed, but discrete blocks of diatomaceous mud and mud. Because of their mode of occurrence, neither the mud nor the diatomaceous mud justify being identified as separate lithologic units, thus defying the usual rules of nomenclature.

Estimated values of constituent abundances obtained from smear slide analyses, wet sieving, and megascopic examination were used in this classification. If a smear slide analysis was suspected of bias toward either the coarse or the fine fraction, a careful re-examination of the core was necessary.

Two or more consecutive units may have the same sediment name, but are described as separate units. Separations are made on the basis of sedimentological dissimilarities such as increased or decreased abundance of a major component, or an abundance of fine inclusions or laminae. These sedimentological changes often coincide with sharp color changes (e.g., piston core 1578-4). Contacts between units are not always sharp; often, they are gradational. Determinations of the positions of these contacts are based upon a close examination of the core and a careful evaluation of the results of various tests performed on the sediments.

The size class (figure 5) of a sand or pebble unit is always mentioned in the description, but any mention of particle sorting is optional (at the discretion of the describer). Because of the significance of pebbles in glacial-marine sediments, their median diameters in pebbly sand or pebbly mud are also mentioned in the description. All grain sizes of particles and inclusions (pebbles, sedimentary clasts, lapilli, manganese nodules, etc.) are given in millimeters.

The following are routine tests and examinations conducted in the study of core units:

1. A test for the presence of carbonate is conducted using dilute (1:20) hydrochloric acid. The reaction on the working slide is observed under a binocular microscope.

2. Hydroxylamine hydrochloride crystals are used to test for the presence of micronodules, or for manganese oxides and/or ferrous oxides occurring as staining material. (This test cannot be used to detect the presence of ferrous or manganese oxides in carbonate-rich sediments, since the carbonate also reacts with the crystals.) Observation of this reaction also makes use of the binocular microscope and a working slide.

3. The coarse fraction, if abundant, is separated by wet-sieving (62μm sieve) and studied under the binocular microscope.

4. The determination of the position of a gradational contact sometimes requires the preparation of several working slides of sediment obtained from close intervals in the vicinity of the contact. (Working slides are not reported in the core descriptions.)

5. A thorough megascopic examination is made of the core in order to determine its sedimentary structures, and the presence of dispersed inclusions or other components such as micronodules, pebbles, sedimentary clasts, or volcaniclastics.

A unit may exhibit several colors, and color changes within a unit are described as being gradational or sharp (abrupt). The color of the sediment is determined by the visual comparison of fresh sediment with the Geological Society of America color chart (Goddard et al., 1970). If the color of a sediment cannot be matched exactly with the color chart, the most closely matching color is used. Mottling refers to irregular spots of differing color within the sediment, and the color of mottling may be included in the description. Mottling usually occurs in diatomaceous ooze.

Any variation in the abundance of a major component in a unit, observable either megascopically or through smear slide analyses, is given in the description. Minor constituents which are scattered within a unit are generally not well-represented on smear slides. Therefore, these constituents (micro-manganese nodules, lapilli, volcanic ash, etc.) are identified on working slides, using proper chemical tests where applicable. Their abundances are determined after thorough examination of the core, and described semi-quantitatively as sparsely scattered, common, or abundant. Manganese and ferrous oxides that occur as staining materials can be either in the form of small patches, or spread uniformly within a certain interval. These stainings are described by three qualitative terms: slightly, moderately, or highly stained.

In describing the internal structures within a sedimentary unit, the stratigraphic position of each structure is noted, and, when applicable, the composition and the color are also described. In this volume, each structure is defined as follows: Layers have a thickness of between 1 to 10 cm, separated from the main unit by a discrete change in lithology and distinct planes of contact. Laminae are similar to layers, but have a thickness of less than 1 cm. Stringers are laminae which are discontinuous and often irregular in form.

Related to the internal structure are zones, and these are defined as small intervals (less than 20 cm) in which a notable change in the abundance of some components or inclusions in the unit can be detected, either through megascopic examination or in the smear slide analysis. In the description of a unit, the following sequence is used: zones, layers, laminae, and stringers.

Inclusions within a unit are described in the following order:

1. Sedimentary clasts are usually described in detail including size, composition, color, compactness, and position in the core.

2. Manganese nodules are described as to their size and position.

3. Volcaniclastics are classified according to the textural classification of Wentworth and Williams (1932). Their position in the core is given, and sometimes, the rock type (pumice, scoriae) is also mentioned.

4. Pebbles are usually described only as to their size and position. Occasionally, rock type and roundness are also given. Coatings, encrustations, and cementations by manganese or ferrous oxides are common on clastics and volcaniclastics; these are mentioned when present.

Macrofossil inclusions are rarely encountered in the cores. Of the more than 460 cores of all types retrieved aboard ARA ISLAS ORCADAS, only two cores, both of which are described in this volume (piston cores 28 and 30), are known to have recovered macrofossils. The position within the core description at which these types of inclusions are mentioned is at the discretion of the describer.

Bioturbated sediments are described in terms of slightly, moderately, or highly bioturbated. The qualifiers can be approximated as follows:

slightly:	less than 5% bioturbations
moderately:	between 5% to 30% bioturbations
highly:	30% or more bioturbations

Operational disturbances are disturbances in the sediment usually occurring during the coring operation, transportation, and, occasionally, during the splitting of the core, resulting in total or partial loss of the primary sedimentary structures and the stratigraphic integrity of the sediment. The degree of the disturbance is based on the value of the sediment for sampling, and is described in terms of slightly, moderately or highly disturbed. Slightly disturbed sediments still retain most of their primary sedimentary structures, particularly along the central axis of the core. Moderately disturbed sediments have lost almost half of their original structures, and must be sampled carefully in order to be stratigraphically meaningful. Highly disturbed sediments have lost most or all of their primary structures; it is not recommended that these be sampled for stratigraphic study because of the mixing of sediment components. Highly mixed sediment that has randomly entered the core by suction during the coring operation is described as flow-in, and is usually characterized by vertical striations which can be traced from the base of the core.

Water entrapped in the liner, and which was not removed aboard ship, can wash the sediment along one side of the liner during transport. This disturbance is described as slightly or moderately washed along the side, and still can be sampled carefully for stratigraphic work. The term, highly washed along the side, is not used because the sediment is almost always highly disturbed. An uncommon disturbance occurs when the overlying sediment is dragged along the side of the liner. The sediment described in this manner also can be sampled carefully for stratigraphic work. For each unit, the most severe disturbance is listed first.

As mentioned earlier in this chapter, all cores (cruise 1578) were received frozen at the Facility. Several of these were opened while frozen; several others were opened while partially frozen. In many cores, whether opened while frozen, partially frozen, or completely thawed, disturbances were found that have been attributed to core freezing. Some of these disturbances, particularly those in sediments which are high in clay content, occurred during splitting of the frozen or thawed core sections. Disturbances caused by freezing are mentioned in the descriptions.

Smear Slide Analysis

The method used in this volume is similar to that used in the ARA ISLAS ORCADAS cruise 1277 core description volume (Kaharoeddin et al., 1979). The abundance of various components of sediment on the smear slides was estimated using petrographic microscopes capable of magnification up to 2000X and with options of using transmitted light, polarized light, phase contrast, and Nomarski differential interference contrast. For each smear slide, the following constituents were quantitatively estimated:

1. Minerals: quartz, feldspar, mica, heavy minerals, volcanic glass, glauconite, pyrite, micromanganese nodules, and zeolites.

2. Biogenic constituents: foraminifera, calcareous nannofossils, unspecified carbonate, diatoms, radiolarians, sponge spicules, silicoflagellates, and ebridians.

Quartz and feldspar are differentiated on the basis of the crystal habit and twinning of feldspar. Keratophyric particles generally can be distinguished, but, due to their mode of formation and often weak birefringence, they are grouped with volcanic glass. Included in micromanganese nodules are ferrous and manganese oxides which occur as staining materials on biogenic particles. Clay minerals, which have refractive indices very close to that of Canada balsam, are detected and estimated by means of phase contrast microscopy.

The percentage composition chart for rock and sediments, as prepared by Shvetsov (Terry and Chilingar, 1955), was used to estimate the abundance of the constituents of the sediments on the smear slides. In all estimates, void spaces were taken into account. On smear slides with abundant coarse fragments, these void spaces often comprise as much as 50% of the total area of the slide. In these cases, estimated abundance percentages based solely on comparison to the chart of Shvetsov are usually of diminished accuracy. In order to improve the quality of the core descriptions, a more accurate method has been devised for the analysis of smear slides with abundant coarse fragments and proportionately high void spaces. This method involves the determination of the ratios of the abundance to one another of various smear slide constituents, from which percentage abundances can be calculated. The steps of this ratio method are outlined, as follows:

1. Estimate the ratio of the total coarse fraction* (consisting usually of quartz, feldspar, heavy minerals, glauconite, radiolarians, and foraminifera) to the total fine fraction (consisting usually of clay, diatoms, silicoflagellates, and nannofossils).

2. List separately, and in order of abundance from the most abundant to the least abundant, the components of the coarse and fine fractions.

3. Using the comparative chart of Shvetsov, and taking into account the void spaces, estimate the percentage abundance of the most abundant component of the coarse fraction (usually quartz).

4. Repeat step 3 for the fine fraction.

5. For the coarse fraction, estimate the ratio of the second most abundant component to the most abundant; next, the ratio of the third most abundant component to the most abundant, etc.

6. Repeat step 5 for the fine fraction.

7. Convert each of the ratios obtained in steps 5 and 6 to a percentage of the estimated percent abundance (from steps 3 and 4) of the most abundant component of the coarse and fine fractions, respectively. For example, if the most abundant component of the coarse fraction was quartz, and was estimated in step 3 to be 45%, and the ratio of the second most abundant component (say, glauconite) to quartz was estimated to be 1:3, then the percentage abundance of glauconite would be 15% (1/3 of 45%).

8. In theory, the total of the percentages of the most abundant components of both size fractions (from steps 3 and 4), when added to the total of the percentages of the less abundant components of each size fraction, should equal 100%, and, ideally, the ratio of the total of all abundance percentages of the coarse fraction constituents (from steps 3 and 7) to the total of all abundance percentages of the fine fraction constituents (from steps 4 and 7) should be the same as the coarse-to-fine fraction ratio estimated in step 1. (The ratio obtained by step 1 serves merely as a reference for comparison with the ratio of the total of the percentages of the coarse fraction constituents to the total of those of the fine fraction, since the ratio obtained in step 1 is usually fairly accurate.) In practice, however, the total of the percentages rarely equals 100% (although usually close), nor do the two ratios agree exactly. Although several variables contribute to the degree of "error" involved (such as the experience of the observer), the degree of variance is primarily a function of the nature of the method itself, involving, as it does, an element of subjectivity in the estimations.

9. The final step, therefore, is to adjust, if necessary, one or more of the percentages of specific components so that the total of all percentages equals 100%. These minor adjustments are not made at random, but instead are made with reference to 1) the megascopic examination, using a binocular microscope, of coarse fraction particles separated by wet sieving; 2) the analysis of other smear slides from the lithologic unit, and 3) the observation of macroscopically visible features and particle distributions within the unit.

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*The coarse fraction is defined as comprising all particles between the lower limit of medium silt (0.016 mm) and the upper limit of coarse sand (2 mm; see figure 5). Particles less than 0.016 mm are considered the fine fraction.

The presence of certain components on the smear slide may require minor variations to the ratio determinations method of step 7. For example, if heavy minerals constitute one of the less abundant components of the coarse fraction, and quartz is the most abundant component of this size fraction, then it will be necessary to determine the ratio of the abundance of the heavy minerals to the abundance of some other coarse fraction component, such as glauconite. Quartz particles are viewed between crossed nicols, whereas heavy minerals are commonly observed with plane-polarized light. Viewed by plane-polarized light, the non-opaque heavy minerals exhibit high relief, but quartz exhibits very low relief and often cannot be distinguished from the Canada balsam. Thus, it becomes necessary to determine the abundance ratio of the heavy minerals to the abundance of some other coarse fraction component exhibiting easily and readily definable boundaries under plane-polarized light.

Smear slides dominated entirely, or almost entirely, by coarse particles may not require application of the ratio method, regardless of the presence of many void spaces.

On smear slides devoid of a coarse fraction, the percentage abundances of the two most abundant components of the fine fraction (usually either diatoms and clay, or diatoms and nannofossils) are commonly determined by use of a simple ratio method. This use of the ratio method is made necessary by the common occurrence of the components in layers.

Almost all smear slides are analyzed by two or more observers. This procedure reduces both individual bias and the probability of misidentification, and increases the reliability of estimates. Also improved is the likelihood that a scarce component will be reported. If a component can be found regularly in most traverses on a smear slide, but its abundance is less than 1% according to the percentage composition chart of Shvetsov, then the abundance of that component is recorded as <1%. If a component is rarely found on a smear slide, it is recorded as <<1%.

SEDIMENT CLASSIFICATION

The sediment classification scheme used in this volume is similar to that of the previous volume (Kaharoeddin et al., 1979), in that the principles follow those of the JOIDES classification. The important characteristics of this classification are: 1) sediment names are those in common usuage; 2) the classification is strictly descriptive, and 3) the classes and groups are based solely on abundance estimates of the constituents as determined by smear slide analyses, wet-sieving, and/or megascopic examination.

Many of the cores recovered on ARA ISLAS ORCADAS cruise 1578 are composed of glacial-marine sediments. Experience gained in the describing of cores recovered during earlier cruises of this vessel indicates that the triangular classification of clastic sediments appearing in previous volumes (Cassidy et al., 1977; Kaharoeddin, 1978; Kaharoeddin et al., 1979) is inadequate for classification of the cruise 1578 sediments; therefore, a new classification has been devised (figure 4).

The three major groups of sediment are (figure 3):

1. Pelagic sediments consisting of pelagic clay, siliceous ooze, calcareous ooze, and a mixture of siliceous and calcareous ooze;
2. Transitional sediments consisting of mixtures of biogenic and clastic sediments, and
3. Terrigenous and volcanic detrital sediments.

General Rules

A. Sediments are named after their major constituent.

B. Lesser constituents which exceed 15% (except for glauconite which must exceed 10%) are used as qualifiers which precede the sediment name.

C. A maximum of two qualifiers may be used, the second being the most abundant.

Specific Rules

A. Pelagic Clay

This type of sediment accumulates at a very slow rate and generally has a brown hue. Authigenic components are common (equal to or greater than 5% in estimated abundance) in this sediment; however, they might be distributed in such a manner that they are not found on the smear slide or are present only in a small quantity. Usually, a careful examination of the core, aided by the smear slide analysis, is necessary to determine whether or not a sediment is a pelagic clay. The primary components of pelagic clay are clay minerals and silt-size quartz particles, and it may contain less than 30% biogenic components. A qualifier cannot be added to pelagic clay; hence, pelagic clay containing 25% diatoms is not called diatomaceous, pelagic clay.

B. Pelagic Biogenic Sediments

Included in this group are sediments containing at least 30% biogenic skeletons, but containing less than 30% silt and clay. They are named according to their principal fossil types: diatomaceous ooze, radiolarian ooze, siliceous ooze, foraminiferal ooze, nannofossil ooze, or calcareous ooze. A second (lesser) biogenic component may be used as a qualifier if present more than 15%. The following rules are applicable for naming the pelagic biogenic sediments:

1. If both the principal and lesser fossil types are similar in their chemical composition (i.e., calcareous or siliceous), and if the ratio of the lesser to the principal fossil type exceeds 0.75, the sediment is called siliceous ooze or calcareous ooze, depending on its chemical composition.

Examples:

Quartz	9%	Quartz	5%
Feldspar	1%	Feldspar	<1%
Volcanic glass	1%	Clay	3%
Glauconite	7%	Foraminifera	40%
Diatoms	45%	Calcareous nannos	38%
Radiolarians	35%	Diatoms	13%
Sponge spicules	2%	Radiolarians	1%
$\frac{\text{Radiolarians}}{\text{Diatoms}}$ = .78		$\frac{\text{Calcareous nannos}}{\text{Foraminifera}}$ = .95	

:hence, siliceous ooze

:hence, calcareous ooze

Quartz	9%
Feldspar	1%
Clay	10%
Volcanic glass	2%
Glauconite	3%
Diatoms	50%
Radiolarians	25%
Silicoflagellates	<1%

$$\frac{\text{Radiolarians}}{\text{Diatoms}} = 0.5$$

:hence, radiolarian, diatomaceous ooze

2. Calcareous sediments which have unspecified carbonate more than one-third of the total carbonate are also called calcareous ooze.

3. If the principal and lesser fossil types differ in chemical composition, and if the ratio of the lesser to the principal fossil type exceeds 0.75, then both components are used in the sediment name joined by a hyphen.

Example:

Quartz	8%
Feldspar	<1%
Clay	7%
Volcanic glass	15%
Carbonate unspecified	7%
Foraminifera	30%
Diatoms	28%
Radiolarians	5%

$$\frac{\text{Diatoms}}{\text{Foraminifera}} = .93$$

:hence, diatomaceous-foraminiferal ooze

C. Transitional Biogenic Sediments

Included in this group are sediments containing at least 30% silt and clay. Two subdivisions are recognized: the transitional siliceous sediments having at least 15% diatoms but less than 30% calcareous skeletons, and transitional calcareous sediments having at least 30% calcareous skeletons. The following rules apply for naming the sediments in this group:

1. A transitional siliceous sediment is called muddy, diatomaceous ooze if diatoms are more abundant than total silt and clay; otherwise, it is called diatomaceous mud.

2. The transitional calcareous sediments are named according to their principal fossil types: marly, foraminiferal ooze or marly, nannofossil ooze. If the ratio of the lesser to the principal fossil type exceeds 0.75, the sediment is called marly, calcareous ooze.

D. Terrigenous Detrital Sediments

Sediments in this group are classified according to their textures as defined by the standard size classes of sediment according to Friedman and Sanders, 1978 (figure 5). The following rules apply for sediments which are primarily composed of mixtures of sand, silt, and clay (figure 4):

1. The sediments are named after their major clastic component (end-member) if that component is greater than or equal to 70%.

2. Sediments containing a mixture of silt and clay greater than or equal to 70% are called mud.

3. Sediments containing between 30% and 50% sand are named: sandy silt if the silt content is between 50% and 70%; sandy clay if the clay content is between 50% and 70%, or sandy mud if the mud content is less than 70%.

4. Sediments containing between 50% and 70% sand and between 30% and 50% mud are called muddy sand.

5. Sediments containing a minor component between 15% and 30% (e.g., diatoms or pebbles) should have a qualifier (e.g., diatomaceous or pebbly). In this case, the percentages of sand, silt, and clay are recomputed to 100% before applying the four rules above.

   Example:

Quartz	58%
Feldspar	2%
Mica	1%
Heavy minerals	1%
Clay	10%
Volcanic glass	4%
Glauconite	1%
Diatoms	20%
Radiolarians	2%
Sponge spicules	1%

   In this example, clastics (quartz, feldspar, mica, heavy minerals, clay, volcanic glass, glauconite) total 77%. If sand-size particles total 45% and silt and clay are 32%, then the recomputed values of

$$\text{sand} = 0.45 \times \frac{100}{77} = 58\%, \text{ and}$$

$$\text{mud} = 0.32 \times \frac{100}{77} = 42\%.$$

   Hence, the sediment is called <u>diatomaceous, muddy sand</u>.

E. Volcanic Detrital Sediments

This sediment group is classified according to the textural and compositional classification of Wentworth and Williams (1932).

1. The nomenclature and the size limits used are as follows:

volcanic breccia:	greater than 32 mm
volcanic lapilli:	less than 32 mm, greater than 4 mm
volcanic ash:	less than 4 mm

2. The volcanic detrital sediments can have biogenic qualifiers by adding the term "bearing" to the qualifier; example: <u>diatom-bearing, volcanic ash</u>. The same term is also added if the volcanic detrital is used as a qualifier to another group of sediments; example: <u>ash-bearing, diatomaceous ooze</u>.

<u>Remarks on the Classification of Terrigenous Detrital Sediments</u>

The proposed triangular classification (figure 4) can be regarded as the sand-silt-clay face of a tetrahedron. The fourth end-member can be a biogenic component or another class of clastic. This new classification has two distinct advantages over previous ones. First, it separates non-end-members into five specific classes (mud, sandy silt, sandy mud, sandy clay, and muddy sand). This is more appropriate and definitive for use with the cruise 1578 cores than would be the previous division of only two classes (sandy mud, and mud). Secondly, unlike the old scheme, the boundaries defining each class are compatible with those of the marine sediment classification (figure 3), and the numerical values of these boundaries are based on the percentage abundance of the components defining the sediment types shown in figure 3. No attempt was made to confirm statistically the numerical definition of each textural class, such as was done for the classification of marine sediments (figure 3) by Kaharoeddin (1978). For example, this classification (figure 3) defines muddy, diatomaceous ooze as a sediment containing 30%-50% silt and clay, in which the percentage abundance of diatoms must exceed that of the silt and clay. Analogously, as is shown by the new triangular classification (figure 4), muddy sand should contain 30%-50% silt and clay, and sandy mud, sandy silt, or sandy clay should contain 30%-50% sand. Thus, members of the series--sand, muddy sand, sandy mud, and mud--are defined by sand contents of 70%-100%, 50%-70%, 30%-50%, and 0%-30%, respectively.

Note that the new classification does not include silty sand or clayey sand. The primary reason for this concerns the size range of the components. Silt and clay are estimated under a high power objective (40x), which has a limited field of view. Because of the high percentage of sand (50%-70%) in silty sand or clayey sand, nearly the entire field of view is masked by sand grains. Under low power objectives (25x or 16x), which provide a large field of view, silt and clay particles cannot be distinguished.

Most elaborate classifications are best applied with complete size analyses (Pettijohn, 1957). For this volume of core descriptions, percentages of the end-members (sand, silt, and clay) were obtained through smear slide analyses, occasionally verified by wet-sieving. This method is consistent with the method of studying pelagic, pelagic-biogenic, or biogenic-transitional sediment.

Classifying sediments solely on the basis of a smear slide analysis occasionally results in an incorrect classification. Sediments deposited in the abyssal plain are largely clay-size, predominantly less than 1 μm. Generally, they have a brownish color and are classified as pelagic clay. However, fine silt-size quartz and feldspar can also be well-represented in pelagic clay, such as in the sediments of the Cape Verde Basin of the Atlantic. The origin of quartz particles in this basin is the Sahara Desert (Rex and Goldberg, 1958). In the Antarctic seas, fine silt-size quartz particles are common (10%-20%) in pelagic clay (Lisitzin, 1972, p. 124). The color of the sediment is not necessarily brown, because oxidation did not always prevail. Thus, olive gray pelagic clay containing fine silt-size quartz can easily be mistaken as mud. In the present work, we have used water depth, geographic location, and available regional information surrounding the core site as aids in naming the sediments correctly. In general, most sediments on the continental slope off Queen Maud Land are glacial-marine sediments, in which mud is common. In the Weddell Abyssal Plain, the sediments are pelagic clay, generally of brownish color, and occasionally olive gray.

In general, all minerals in the sediment are considered as clastics. However, this is not true in marine sediments, because authigenic minerals, such as glauconite, micro-Mn nodules, and zeolites, are also present in small quantities.

Glauconite content can be as high as 20% in marine sediments, but in this case the glauconite has been transported and enriched because of the action of various bottom currents. Furthermore, some "glauconites" are actually composed of aggregates of green minerals, which are commonly clastics.

CLASSIFICATION OF MARINE SEDIMENTS

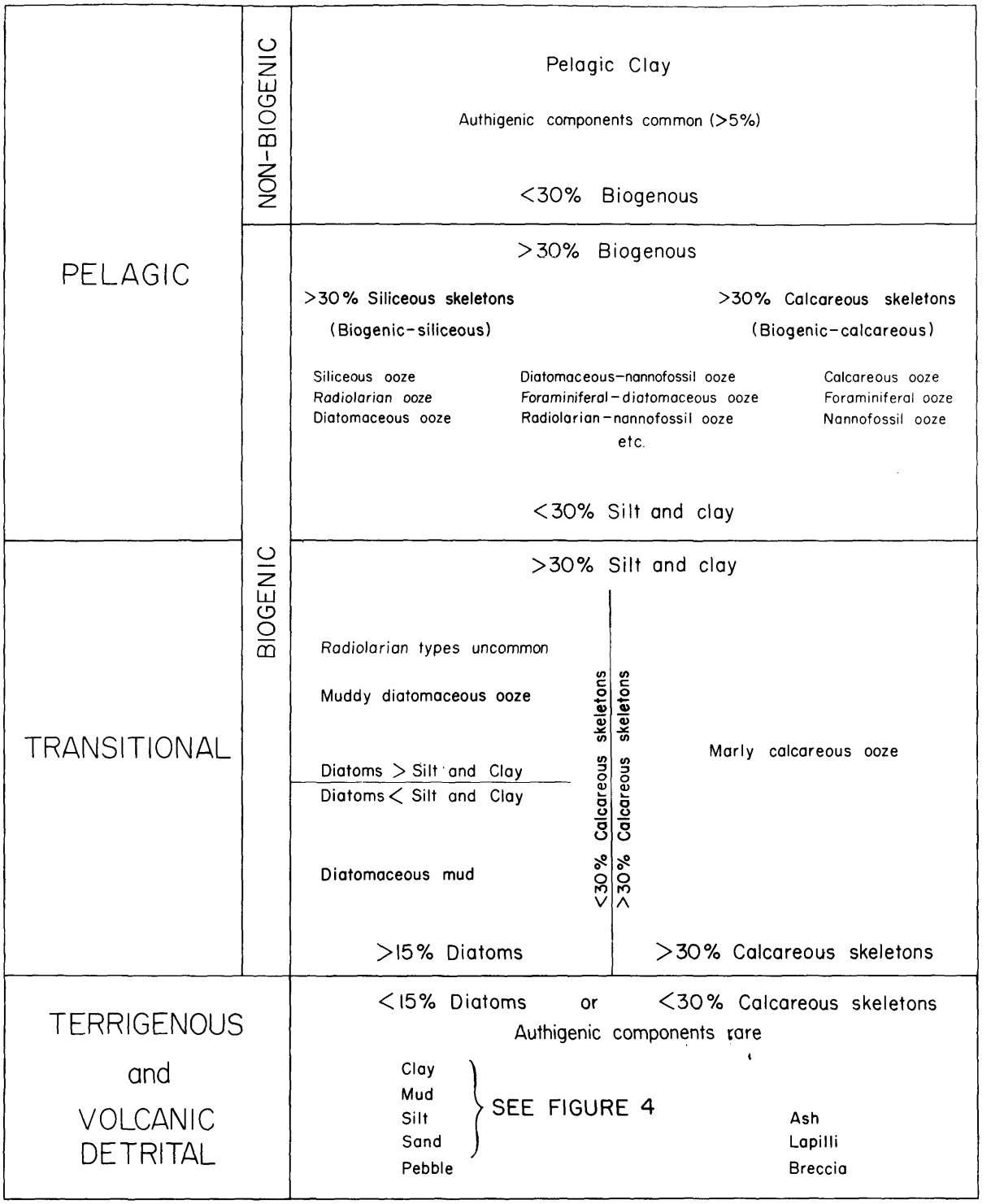
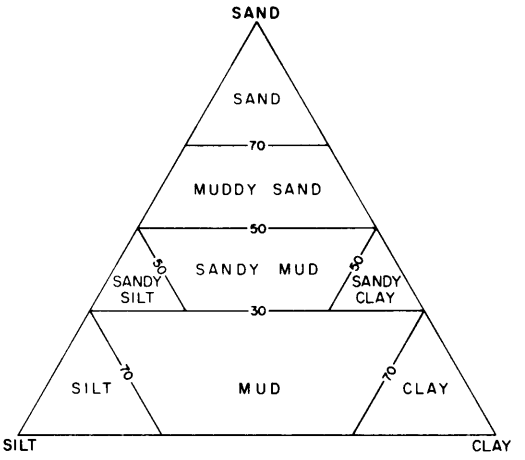


FIGURE 3

FIGURE 4



CLASSIFICATION OF CLASTIC SEDIMENTS

LIMITING SIZE in mm	SIZE CLASS	
64	VERY COARSE	PEBBLES
32	COARSE	
16	MEDIUM	
8	FINE	
4	VERY FINE	
2	VERY COARSE	SAND
1	COARSE	
.5	MEDIUM	
.25	FINE	
.125	VERY FINE	
.062	COARSE	SILT
.031	MEDIUM	
.016	FINE	
.008	VERY FINE	
.004	CLAY	

STANDARD SIZE CLASSES OF SEDIMENT
(MODIFIED AFTER FRIEDMAN AND SANDERS, 1978)

FIGURE 5

BASAL SEDIMENT AGES

OF ISLAS ORCADAS CRUISE 1578 PISTON CORES

The following text is that of an article appearing in the Antarctic Journal of the United States (Ciesielski and Jones, 1979), and has been reproduced in this volume by consent of the authors. References cited are to be found in the references section of this volume; italicized statements are those which have been added to the original text.

"ARA ISLAS ORCADAS cruise 15 was the fourth of five multidisciplinary (marine geology, geophysics, and physical oceanography) cruises made by this vessel to the South Atlantic sector of the Southern Ocean. We present here the results of our attempts to obtain the basal sediment ages of the 58 piston cores recovered on this cruise (see accompanying figure; *figure 1, this volume*).

ISLAS ORCADAS coring activities were concentrated in the region of the Weddell Sea and Scotia Sea. One of the primary coring objectives on this cruise was to obtain a broad distribution of cores in the region for paleo-oceanographic studies. It was hoped that studies of these cores would provide valuable information on the history of sea ice fluctuations and antarctic bottom water formation in the Weddell Sea area.

Another major coring objective was to recover a large number of cores in close proximity to the Antarctic continental margin (inset of figure; *figure 1, this volume*). Dr. Anderson (Rice University), chief geologist on this cruise, and others are also interested in studying the sedimentology of these cores to further elucidate the nature of glacial-marine sedimentary processes and their relationship to the climatic and glacial conditions of Antarctica. An additional objective was to obtain early to mid-Tertiary cores from this high-latitude region that may yield data on the Tertiary growth of the Antarctic Ice Sheet.

Of the 58 successful piston coring attempts, 51 recovered sediment that at least partially filled the core liner with undisturbed sediment. Initially, samples for micropaleontological analyses were taken within 10 centimeters of *the base of* most cores. Piston cores with disturbed basal sedimentary sequences were sampled not at the base of the core but immediately above (within a few centimeters of) the disturbed sequence.

Micropaleontological analyses of the initial samples from these 51 cores revealed that 32 were either barren of microfossils or contained a microfossil assemblage insufficient for reliable age determination. An average of 4 additional samples were taken from the *31* cores for micropaleontological study. Because of the largely non-biogenic nature of most core sediments, the additional samples were not taken from fixed intervals in the cores but were instead taken from positions in the cores where the sediment lithology appeared most favorable for the preservation of microfossils. Unfortunately, analyses of the additional 110 samples taken from these *31* cores yielded reliable age information on only 8 additional cores.

Sediment recovery in 6 piston cores was limited to either a few centimeters of disturbed sediment in the bottom of the core liner or to the piston core cutter and/or catcher (or both). Cores IØ-1578-21, 54, and 54A recovered sediments in the core liner and core cutter and/or catcher. These samples are stored in bags, with the liner sediments being stored separately from the core cutter and catcher samples. Only the core cutter and/or catcher sediments of these three cores were sampled for age-dating purposes. Bag sample sediments from the core liners of cores IØ-1578-51 and 53A and from the core catcher of core IØ-1578-53 were also sampled for study. These samples represent the only sediment recovered from these cores. Core IØ-1578-17 recovered 185 centimeters of sediment that is stored in bags; however, only the core cutter and catcher of this core was sampled for analysis.

The primary purpose of presenting these sediment ages is to aid other investigators in selecting piston cores suitable for their own particular research interests. All piston core ages are based on the microfossil assemblage present in only one or two samples. Piston core age

determinations usually were based upon the presence of just a few age-diagnostic microfossil species. In addition, microfossils were generally rare and very poorly preserved. A considerable number of allochthonous microfossils also were present and made accurate age determinations difficult. For these reasons, individuals whose research requires precise age determinations may wish to obtain additional confirmation of the age dates provided here. Investigators seeking basal sediment ages for piston cores from ISLAS ORCADAS cruises 7, 11, and 12 are referred to Ciesielski and Wise (1977), Ciesielski, Kaharoeddin, and Cassidy (1978), and DeFelice (1978), respectively. *(See also Jones et al., 1979 for cruise 16 age dates.)*

In the laboratory, two smear slide preparations were examined from each sample for their calcareous nannofossil, diatom, and silicoflagellate content. Two cores, IØ-1578-24 and 59, contained only calcareous nannofossils and were age-dated utilizing the calcareous nannofossil zonation of Wise and Wind (1977). All other cores were age-dated using the high-latitude silicoflagellate zonation of Ciesielski (1975) and the diatom zonation of McCollum (1975). Weaver's (1976) modifications of the Early Pliocene portion of McCollum's (1975) zonation were employed.

The results of the micropaleontological analysis of ISLAS ORCADAS cruise 15 piston core sediments are presented in the table *(table 3, this volume)*. Sediment ages are given for 27 of 58 piston cores recovered on cruise 15, and basal sediment ages are assigned to 21 of these 27 cores. Six other cores (marked in the table by a single asterisk) had barren basal sediments but contained sufficient microfossils in other samples taken up-core to make an age assignment.

Samples examined from more than half of the cruise 15 cores (31 of 58 cores) were either barren or contained insufficient microfossils to make an age determination. Of these samples, 15 contained some microfossils but could not be reliably age-dated for one or more of the following reasons: (a) microfossils were not age-diagnostic, (b) diagnostic microfossils were too rare to assure that they were autochthonous and not allochthonous, and (c) guide fossils from a number of biostratigraphic zones were present in nearly equal numbers, thereby making it difficult to identify the autochthonous microfossil component from the allochthonous component. These piston cores are identified in the age column of the table by the abbreviation NADP ("no age date possible"). The only sample intervals listed in the table for these cores are those that did contain microfossils.

Smear slides examined from 16 other cores were found to be completely barren of microfossils. The two sample intervals given in the table for those found to be barren represent the lower and uppermost sample intervals examined for microfossils. Only one smear slide sample was examined from those barren cores with only one listed sample interval.

The ages of the cruise 15 cores range from Late Eocene to Quaternary; sediments from 14 cores are Pliocene or older. The age distribution of these cores (by epoch) is as follows: 13 Quaternary, 3 Pliocene, 9 Miocene, 1 Oligocene, and 1 Eocene-Oligocene.

All *31* piston cores described as barren or as containing too few microfossils for a reliable age designation are located on the Weddell Sea abyssal plain or are on or near the Antarctic continental rise or slope (*figure 1, this volume*). Twenty-one of the piston cores that could not be age-dated are located on the Weddell Sea abyssal plain. The poor preservation of microfossils or the barren nature of the samples examined from this area is partially attributed to the mechanical breakage and chemical dissolution of microfossils by high-velocity antarctic bottom water. The presence of ephemeral pack ice throughout this region has also inhibited primary productivity and resulted in a much-reduced supply of skeletal debris to the sea floor. Sediments in this region are primarily pelagic clays and muds.

The largest occurrence of cruise 15 pre-Pliocene cores is located on the continental slope or on or near the continental rise of the Princess Martha Coast (inset of figure; *figure 1, this volume*). These cores represent nine of the eleven pre-Pliocene cores recovered on this cruise.

Strong contour currents along the continental rise and lower continental slope may be responsible for the apparent low rates of sediment deposition and/or the erosion of Quaternary to Miocene sediments in this region.

Most of the sediments examined in this study were pelagic clays, muds, gravels, and sands. Detailed lithologic descriptions of all cruise 15 piston cores are in preparation (staff of Antarctic Marine Geology Research Facility).

This work has been supported by the Institute of Polar Studies at The Ohio State University. We thank Dennis Cassidy (Florida State University) for useful advice and preparation of the core location map."

The table of age dates (table 3) presented in this chapter is a revised version of that appearing in Ciesielski and Jones (1979). These revisions are: substitution of described core lengths for undescribed core lengths, adjustments to the assigned sample interval depths, and the identification of unit lithologies from which the core samples were removed. These revisions do not alter the assigned ages.

TABLE 3

BASAL SEDIMENT AGES OF PISTON CORES

Core Number	Latitude(S)	Longitude(W)	Water Depth(m)	Sample Interval(cm)	Sediment Lithology***	Core Length(cm)	Age****
2	58 16.2'	28 38.9'	3246	357-358	VA	360	Quaternary
4	59°13.8'	19°43.6'	4217	949-950	MDO	953	Quaternary
5	59°48.0'	13°28.7'	3968	555-556	DO	556	Early Pliocene
6	59°29.2'	9°51.2'	4283	639-640	ABMDO	641	Early Pliocene
7	60°00.4'	6°45.5'	5214	784-785	M	788	Late Miocene
8	60°33.3'	3°38.5'	5130	279-280*	PC	896	Quaternary?
9	61°57.3'	3°34.5'	5201	99-100;358-359	PC;SLT	362	NADP
10	63°32.1'	6°26.7'	5128	40-41*	PC	66	Quaternary?
11	64°58.7'	7°27.1'	4987	220-221;231-232	PC	249	NADP
12	66°58.9'	7°45.2'	4806	133-134;392-393	SLT;PC	397	Barren
14	68°41.8'	10°13.5'	4256	354-355	PC	357	Late Miocene
16	70°36.7'	10°03.8'	366	120-121;137-138	PBM	140	NADP
17	70°34.1'	10°04.5'	700	Core Catcher	MS	BAG	NADP
18	70°33.6'	10°10.9'	1039	120-121	PB	131	NADP
19	70°32.4'	10°16.4'	1339	498-499	M	499	NADP
20	70°28.3'	10°23.0'	1734	16-17;Mixed basal 10 cm (BAG)	M;DM	19	Quaternary
21	70°15.8'	10°39.1'	2222	Core Catcher	M	BAG	Quaternary
22	69°55.1'	10°57.8'	2820	386-387;509-510	M	512	Barren
24	69°58.2'	12°17.0'	4078	1065-1066	DM	1068	Mid-Late Oligocene
25	71°01.3'	18°16.0'	4440	1010-1011	SM	1013	Late Miocene
26	71°54.1'	17°15.6'	2242	900-901;950-951	M	1135	NADP
27	72°24.5'	19°25.1'	3274	181-182;928-929	MFO;PB	929	Barren
28	72°11.4'	15°18.3'	530	20-21*	PBM	260	Quaternary?
29	72°09.1'	15°31.8'	380	240-241	SM	241	Barren
30	71°58.9'	16°12.6'	530	144-145	SM	145	Quaternary?
31	71°58.6'	16°18.6'	810	10-11;240-241	MS	242	Barren
32	71°58.1'	16°29.6'	1061	79-80*	MS	87	Quaternary
33	71°55.6'	16°43.1'	1536	518-519	M	521	Late Miocene
34	71°54.0'	16°55.9'	1865	766-767	M	1049	Late Miocene
35	71°51.5'	17°10.2'	2350	1131-1132	M	1143	Late Miocene?
36	71°46.6'	17°31.1'	2751	800-801	PBM	802	Late Miocene
37	71°31.6'	18°07.5'	3681	898-899	M	1139	Late Miocene?
38	71°14.2'	19°08.8'	4301	157-158**	M	486	NADP
39	70°39.4'	21°34.6'	4334	60-61*	M	796	Late Miocene?
40	69°58.9'	26°02.2'	4481	5-6;1067-1068	PC	1070	Barren
41	69°00.5'	24°46.6'	4631	1-2;470-471	PC;M	471	NADP
42	67°59.3'	23°26.1'	4746	20-21;847-848	S	848	Barren
43	67°00.3'	22°07.1'	4812	87-88	S	88	Barren
44	66°00.9'	20°53.4'	4857	1-2**	S	296	NADP
45	64°54.5'	19°58.3'	4898	1-2**	PC	500	NADP
47	63°09.2'	20°08.9'	4890	1-2**	PC	186	NADP
47A	62°59.5'	19°46.8'	4855	20-21**	PC	900	NADP
48	61°59.7'	20°00.3'	4890	1-2**	PC	933	NADP
49	61°05.6'	19°51.9'	4718	938-939	PC	940	Quaternary
50	64°57.5'	24°21.0'	4852	820-821	SLT	824	Barren
51	68°00.8'	29°51.4'	4563	Bagged Recovery Only	PC	BAG	Barren
52	66°16.0'	33°04.1'	4649	46-47	PC	351	Barren
53	64°58.0'	35°16.6'	4733	Core Catcher (Bagged Recovery Only)	PC	BAG	Barren
53A	64°57.7'	35°19.9'	4731	Bagged Recovery Only	M	BAG	Barren
54	64°48.1'	35°43.9'	4729	Core Catcher/Cutter	PC	BAG	Barren
54A	64°42.5'	36°06.3'	4724	Core Catcher/Cutter	PC	BAG	Barren
55	64°02.8'	36°58.0'	4353	1-2;514-515	PC	515	NADP
56	63°05.8'	38°27.6'	4512	813-814	PC	814	Barren
59	60°33.6'	40°13.2'	2707	80-81;125-126	PC	385	Late Eocene-Early Oligocene
61	58°00.1'	41°00.2'	3438	170-171	DSM	171	Early Pliocene
62	57°00.1'	41°01.1'	3420	565-566	DM	568	Quaternary
63	56°01.7'	41°09.7'	3091	496-497	DM	497	Quaternary
64	55°39.5'	41°10.0'	3420	460-461	DM	473	Quaternary

*Age assignment of core based on sediment from this interval. Samples examined below this interval are barren or do not contain age-diagnostic microfossils.

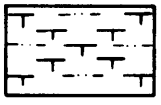
**This sample interval contains microfossils that are not age-diagnostic. All samples examined below this interval are barren.

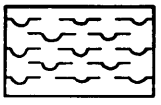
***ABMDO = ash-bearing, muddy diatomaceous ooze
DM = diatomaceous mud
DO = diatomaceous ooze
DSM = diatomaceous, sandy mud
M = mud
MDO = muddy, diatomaceous ooze
MFO = muddy, foraminiferal ooze
MS = muddy sand
PB = pebbles
PBM = pebbly mud
PC = pelagic clay
S = sand
SLT = silt
SM = sandy mud
VA = volcanic ash

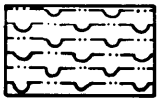
****NADP = No age date possible, although microfossils present.

KEY

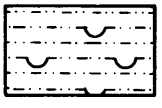
SYMBOLS USED FOR CORE DESCRIPTIONS

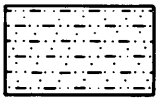

Marly, foraminiferal ooze

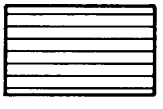

Diatomaceous ooze

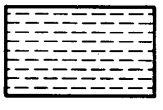

Muddy, diatomaceous ooze

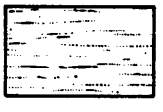

Mud

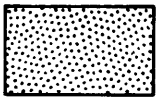

Diatomaceous mud

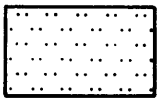

Sandy mud


Clay
Pelagic clay


Silt


Sandy silt


Sand

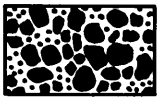

Muddy sand

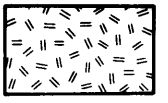
Gradational contact

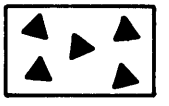
Sharp contact

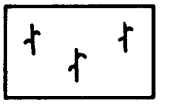
303 Core section "breaks"

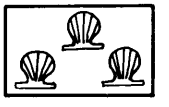
SC Scale change

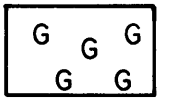

Pebbles
Conglomerates


Volcanic ash
(common to abundant if <15%)


Lapilli

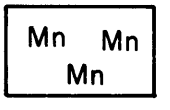

Bryozoa


Pelecypods

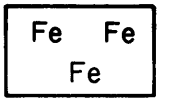


Glauconite
(common to abundant if <10%)

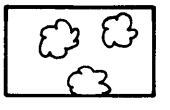

Sedimentary clasts

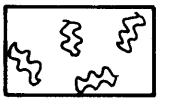


Micro-manganese nodules
(common to abundant)
Manganese oxide stained
(moderately to highly)



Iron oxide stained
(moderately to highly)


Mottling


Bioturbation


Slightly disturbed

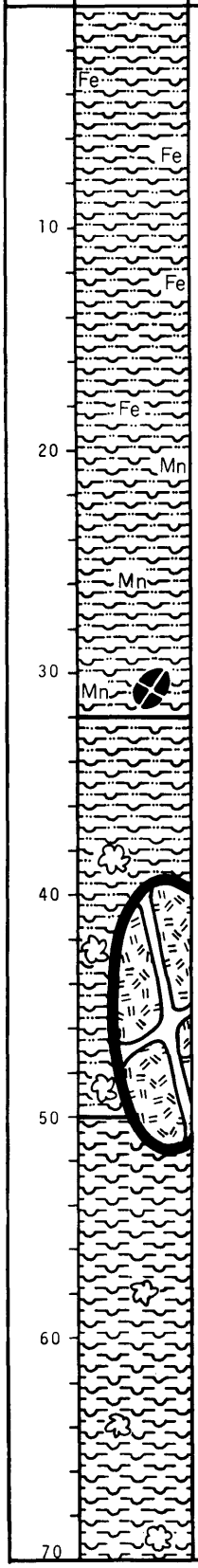

Moderately to highly disturbed

ISLAS ORCADAS PC 1578-2

LATITUDE: 58°16.2' S CORR. DEPTH: 3246 M, 1775 FM

LONGITUDE: 28°38.9' W CORE LENGTH: 360 CM

LENGTH (cm) | LITHOLOGY | DEFORMATION



LITHOLOGIC DESCRIPTION

0-32 cm: Muddy, diatomaceous ooze, moderate brown (5YR 3/4); moderately stained with iron oxides between 0-21 cm; moderately stained with manganese oxides between 21-32 cm; 17 mm sedimentary clast between 30-32 cm, composed of diatomaceous ooze, yellowish gray (5Y 7/2), soft; slightly washed along the side between 0-32 cm; sharp contact.

smear slide:	10 cm
Quartz	15
Feldspar	1
Mica	1
Heavy minerals	2
Clay	12
Volcanic glass	8
Diatoms	61
Radiolarians	<1
Sponge spicules	<<1
Silicoflagellates	<1

32-50 cm: Muddy, diatomaceous ooze, moderate olive brown (5Y 4/4); mottled with light olive gray (5Y 5/2) between 38-50 cm; slightly stained with manganese oxides between 37-40 cm and 48-50 cm; zone of higher diatom content between 32-34 cm; 125 mm sedimentary clast between 39-52 cm (extends into next unit), composed of volcanic ash, olive black (5Y 2/1), moderately compacted; slightly washed along the side between 34-50 cm; sharp contact.

smear slides:	38 cm	(sedimentary clast) 46 cm
Quartz	20	35
Feldspar	3	7
Heavy minerals	2	4
Clay	15	6
Volcanic glass	4	45
Diatoms	56	3
Radiolarians	<1	-
Sponge spicules	<<1	-
Silicoflagellates	<1	-

50-80 cm: Diatomaceous ooze, light olive gray (5Y 5/2); mottled with yellowish gray (5Y 7/2) between 57-72 cm; volcanic ash sparsely scattered throughout; 3 mm patches slightly stained with iron oxides, sparsely scattered between 56-67 cm; slightly washed along the side between 50-80 cm; sharp contact.

smear slide:	56 cm
Quartz	7
Feldspar	5
Heavy minerals	1
Clay	9
Volcanic glass	2
Diatoms	75
Radiolarians	<<1
Sponge spicules	1
Silicoflagellates	<1

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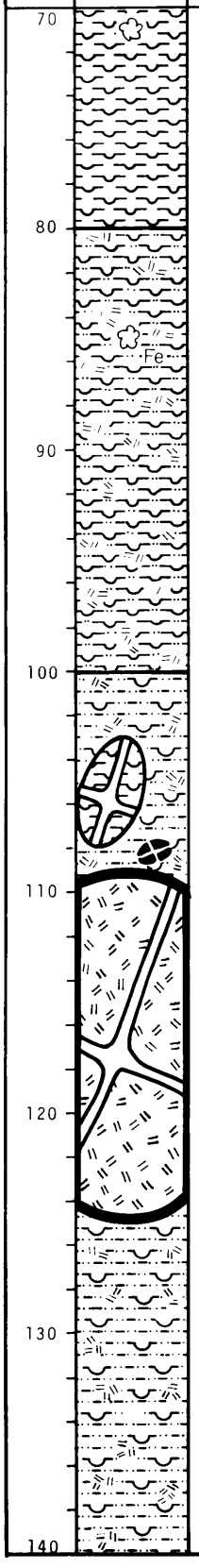
ISLAS ORCADAS PC 1578-2



LATITUDE: 58°16.2′ S CORR. DEPTH: 3246 M, 1775 FM

LONGITUDE: 28°38.9′ W CORE LENGTH: 360 CM

LITHOLOGIC DESCRIPTION

80-100 cm: Ash-bearing, muddy, diatomaceous ooze, olive gray (5Y 3/2), abruptly changing at 85 cm to moderate olive brown (5Y 4/4); mottled with light olive gray (5Y 5/2) between 84-88 cm; 6 mm patch moderately stained with iron oxide between 85-86 cm; zone of higher volcanic ash content between 84-87 cm; slightly washed along the side between 80-100 cm; sharp contact.

smear slides:	82 cm	89 cm
Quartz	30	25
Feldspar	3	3
Heavy minerals	1	2
Clay	10	10
Volcanic glass	18	15
Diatoms	38	45
Radiolarians	<1	<<1
Silicoflagellates	<1	<1

100-159 cm: Ash-bearing, diatomaceous mud, olive gray (5Y 3/2), abruptly changing at 126 cm to light olive gray (5Y 5/2); patches up to 8 mm of volcanic ash (median diameter 2 mm) between 102-104 cm; stringers of diatomaceous ooze, light olive gray (5Y 5/2), between 126-132 cm; stringers of volcanic ash (median diameter 3 mm) between 126-127 cm; sedimentary clasts between 103-108 cm (50 mm) and 108-109 cm (5 mm), composed of diatomaceous ooze, yellowish gray (5Y 7/2), soft; 30 mm sedimentary clast between 144-147 cm, composed of diatomaceous ooze, yellowish gray (5Y 7/2) and volcanic ash, olive black (5Y 2/1), soft; sedimentary clasts between 109-125 cm (160 mm) and 148-159 cm (105 mm), composed of volcanic ash, olive black (5Y 2/1), moderately compacted, contain laminae and stringers of mud and diatomaceous mud; slightly washed along the side between 100-159 cm; sharp contact, coincident with lower boundary of clast at 148-159 cm.

smear slides:	106 cm	(sed. clast) 113 cm	129 cm	(sed. clast) 153 cm
Quartz	35	40	35	35
Feldspar	1	5	2	8
Heavy minerals	2	3	1	3
Clay	8	2	12	<<1
Volcanic glass	36	47	23	54
Diatoms	17	3	27	<1
Radiolarians	1	-	<1	-
Sponge spicules	<<1	<<1	<<1	-
Silicoflagellates	<<1	-	<1	<<1

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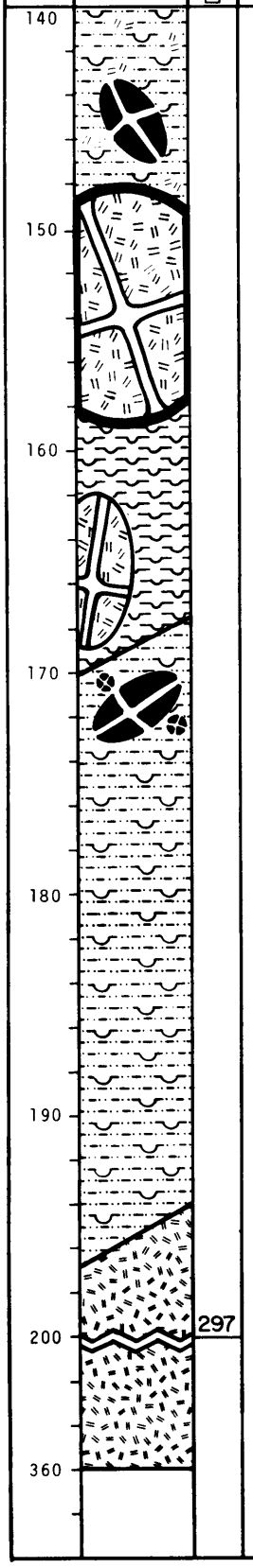
Logged by: Goldstein, Graves, Kaharoeddin

ISLAS ORCADAS PC 1578-2



LATITUDE: 58°16.2' S CORR. DEPTH: 3246 M, 1775 FM

LONGITUDE: 28°38.9' W CORE LENGTH: 360 CM

LITHOLOGIC DESCRIPTION

159-169 cm: Diatomaceous ooze, light olive gray (5Y 5/2); 62 mm sedimentary clast between 162-169 cm, composed of volcanic ash, olive black (5Y 2/1), soft, contains laminae (up to 0.4 cm) composed of diatomaceous ooze; slightly washed along the side between 159-169 cm; sharp, inclined contact.

smear slide:	160 cm
Quartz	15
Feldspar	2
Heavy minerals	1
Clay	10
Volcanic glass	2
Diatoms	70
Radiolarians	<1
Silicoflagellates	<1

169-195 cm: Diatomaceous mud, olive gray (5Y 4/1); volcanic ash sparsely scattered throughout; zone of higher diatom content between 185-192 cm; 15 mm sedimentary clast (ellipsoid), inclined, between 170-173 cm; sedimentary clasts up to 10 mm between 170-171 cm and 172-173 cm, composed of diatomaceous ooze, light olive gray (5Y 5/2), soft; slightly washed along the side between 169-195 cm; sharp, inclined contact.

smear slides:	(sedimentary clast) 171 cm	178 cm
Quartz	10	36
Feldspar	3	5
Heavy minerals	1	2
Clay	7	15
Volcanic glass	2	12
Glauconite	<<1	<1
Micro-Mn nodules	<<1	-
Diatoms	76	30
Radiolarians	<1	<<1
Sponge spicules	-	<<1
Silicoflagellates	1	<<1

195-360 cm: Volcanic ash, olive black (5Y 2/1); size increases with depth, sorting becomes poor with depth: between 195-198 cm, median diameter 0.03 mm, well-sorted; between 198-218 cm, median diameter 0.06 mm, well-sorted; between 218-240 cm, median diameter 0.12 mm, moderately sorted; between 240-360 cm, median diameter 0.5 mm, poorly sorted, contains abundant lapilli; slightly washed along the side between 195-288 cm.

smear slides:	197 cm	200 cm
Quartz	30	30
Feldspar	7	12
Heavy minerals	1	5
Clay	4	<<1
Volcanic glass	55	53
Diatoms	3	<<1
Radiolarians	-	<1
Sponge spicules	-	<<1

Bottom topography: flat plain, approximately 5 km from rough hills.

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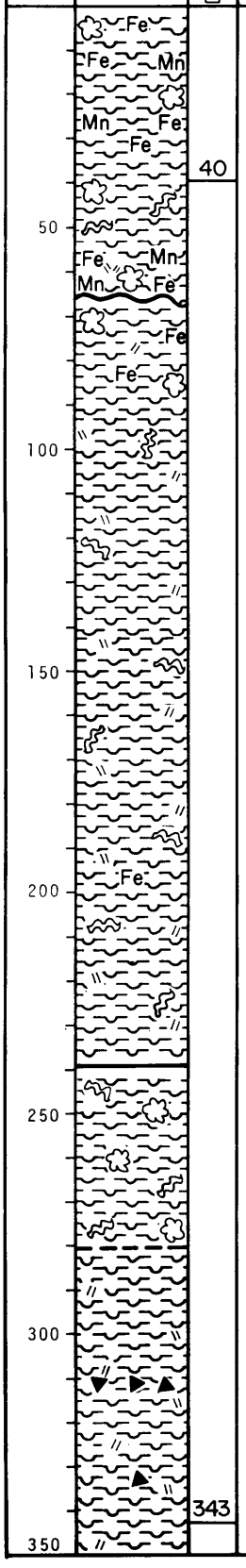
ISLAS ORCADAS PC 1578-4



LATITUDE: 59°13.8' S CORR. DEPTH: 4217 M, 2306 FM

LONGITUDE: 19°43.6' W CORE LENGTH: 953 CM

LITHOLOGIC DESCRIPTION

0-66 cm: Diatomaceous ooze, light olive gray (5Y 5/2); mottled with yellowish gray (5Y 7/2) throughout; "wet cotton" texture characteristic of nearly pure diatomaceous ooze between 11-19 cm, 25-33 cm and 52-58 cm; highly stained with intermixed iron and manganese oxides between 12-18 cm, 25-30 cm, 52-58 cm, 63-64 cm and 65-66 cm; moderately stained with iron oxides between 0-8 cm and 29-31 cm; volcanic ash sparsely scattered between 33-66 cm; 10 mm concentration of volcanic ash (up to 3 mm) between 62-63 cm; slightly bioturbated between 41-51 cm; slightly washed along the side between 0-13 cm and 40-66 cm; sharp, wavy contact.

smear slides:	4 cm	38 cm
Quartz	2	5
Feldspar	<1	<<1
Mica	<<1	-
Heavy minerals	<1	<<1
Clay	<<1	<1
Volcanic glass	1	4
Micro-Mn nodules	2	<1
Diatoms	95	91
Radiolarians	<1	<1
Sponge spicules	<<1	<<1
Silicoflagellates	<1	<1

66-239 cm: Diatomaceous ooze, light olive gray (5Y 5/2); mottled with yellowish gray (5Y 7/2) between 66-88 cm; "wet cotton" texture common between 216-220 cm; moderately stained with iron oxides in irregular patches up to 8 mm between 71-76 cm, 81-87 cm and 196-200 cm; volcanic ash (median diameter 0.4 mm) common throughout; concentration of volcanic ash (median diameter 1 mm) between 113-114 cm; zones of ash-bearing, diatomaceous ooze between 123-136 cm and 160-167 cm; layers up to 30 mm, composed of diatomaceous ooze, sparsely scattered between 179-226 cm; laminae up to 10 mm, composed of diatomaceous ooze, moderate olive brown (5Y 4/4) containing volcanic ash, slightly compacted, sparsely scattered between 105-178 cm; laminae of volcanic ash between 233-234 cm (8 mm) and 238-239 cm (10 mm); slightly bioturbated between 96-239 cm; slightly washed along the side between 66-82 cm; sharp contact.

smear slide:	103 cm
Quartz	3
Heavy minerals	<1
Clay	<<1
Volcanic glass	5
Diatoms	91
Radiolarians	1
Silicoflagellates	<1

239-281 cm: Diatomaceous ooze, light olive gray (5Y 5/2); mottled with yellowish gray (5Y 7/2); volcanic ash sparsely scattered throughout; slightly bioturbated; gradational contact.

smear slide:	269 cm
Quartz	5
Feldspar	<1
Heavy minerals	<1
Clay	2
Volcanic glass	3
Diatoms	90
Radiolarians	<1
Sponge spicules	<<1
Silicoflagellates	<1
Ebridians	<1

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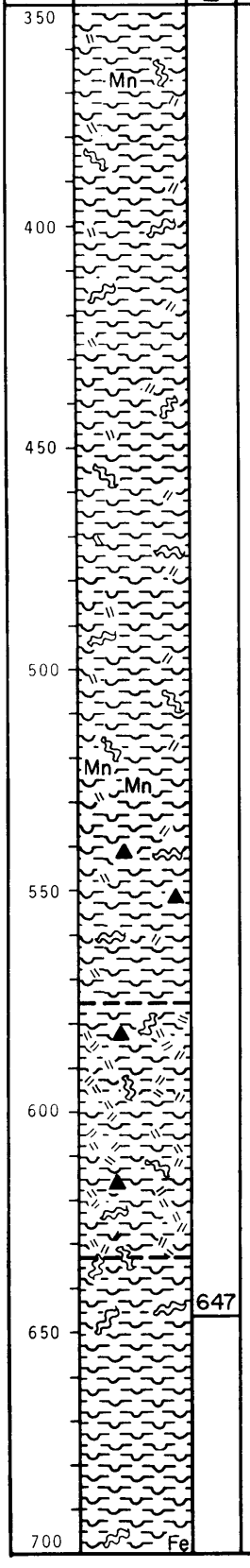
ISLAS ORCADAS PC 1578-4



LATITUDE: 59°13.8′ S CORR. DEPTH: 4217 M, 2306 FM

LONGITUDE: 19°43.6′ W CORE LENGTH: 953 CM

LITHOLOGIC DESCRIPTION

281-576 cm: Diatomaceous ooze, dark yellowish brown (10YR 4/2); unit has higher clay content than overlying unit with occasional layers of muddy, diatomaceous ooze; highly stained with manganese oxides between 522-532 cm, moderately stained with manganese oxides between 364-375 cm; volcanic ash (median diameter 0.2 mm) common throughout; irregular concentrations up to 25 mm of volcanic ash (up to 2 mm, median diameter 0.2 mm) sparsely scattered between 283-507 cm; 8 mm pumice between 333-334 cm; scoriae between 311-314 cm (10 mm, 18 mm and 25 mm); pumice up to 20 mm abundant between 547-551 cm; moderately bioturbated between 360-576 cm; gradational contact.

smear slides:	287 cm	376 cm	488 cm
Quartz	10	12	15
Feldspar	1	2	2
Heavy minerals	1	<1	1
Clay	12	8	1
Volcanic glass	8	10	17
Micro-Mn nodules	-	<1	-
Diatoms	68	68	62
Radiolarians	<1	<1	2
Sponge spicules	<<1	<<1	<<1
Silicoflagellates	<<1	<1	<1
Ebridians	<1	<1	<1

576-633 cm: Ash-bearing, diatomaceous ooze, light olive gray (5Y 5/2); ash size up to 3 mm; concentrations up to 4 mm of volcanic ash (median diameter 0.2 mm) between 590-591 cm; scoriae between 586-587 cm (6 mm) and 615-616 cm (7 mm); unit is moderately bioturbated; gradational, bioturbuted contact.

smear slide:	589 cm
Quartz	4
Feldspar	<1
Heavy minerals	<1
Clay	1
Volcanic glass	15
Diatoms	79
Radiolarians	1
Silicoflagellates	<<1

633-731 cm: Diatomaceous ooze, yellowish gray (5Y 7/2); gradationally changing at 709 cm to light olive gray (5Y 5/2); 5 mm concentration of iron oxides between 698-699 cm; volcanic ash (median diameter 0.2 mm) sparsely scattered throughout; 1 cm lamina between 641-642 cm, composed of diatomaceous ooze, light olive brown (5Y 5/6); moderately bioturbated between 633-638 cm; slightly bioturbated between 638-651 cm and 692-731 cm; gradational contact.

smear slides:	639 cm	717 cm
Quartz	3	10
Feldspar	<<1	1
Heavy minerals	<<1	<1
Clay	<<1	-
Volcanic glass	2	6
Diatoms	95	82
Radiolarians	<1	1
Silicoflagellates	<<1	<1

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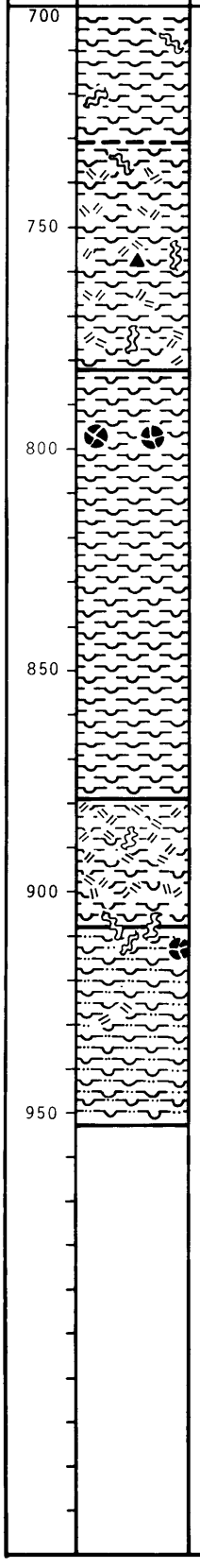
ISLAS ORCADAS PC 1578-4



LATITUDE: 59°13.8′ S CORR. DEPTH: 4217 M, 2306 FM

LONGITUDE: 19°43.6′ W CORE LENGTH: 953 CM

LITHOLOGIC DESCRIPTION

731-784 cm: Ash-bearing, diatomaceous ooze, light olive gray (5Y 5/2); 1 cm lamina between 767-768 cm, composed of diatomaceous ooze, light olive brown (5Y 5/6); 5 mm lamina between 746-747 cm, composed of diatomaceous ooze, yellowish gray (5Y 7/2); 5 mm scoria between 757-758; slightly bioturbated; sharp contact.

smear slide:	744 cm
Quartz	7
Feldspar	1
Heavy minerals	1
Clay	1
Volcanic glass	18
Diatoms	71
Radiolarians	1
Sponge spicules	<<1
Silicoflagellates	<<1

784-879 cm: Diatomaceous ooze, light olive gray (5Y 5/2) between 784-800 cm and 831-836 cm, interbedded with finely-laminated moderate olive brown (5Y 4/4) and yellowish gray (5Y 7/2) between 800-831 cm and 836-879 cm; three 1 cm elongated concentrations of volcanic ash between 786-788 cm; 1 cm laminae of volcanic ash between 816-817 cm and 818-819 cm; laminae between 789-790 cm (10 mm) and 791-792 cm (5 mm), composed of diatomaceous ooze, moderate olive brown (5Y 4/4); sedimentary clasts between 795-797 cm (15 mm and 10 mm) composed of ash-bearing, diatomaceous ooze; sharp contact.

smear slides:	789 cm	843 cm
Quartz	18	3
Feldspar	1	<<1
Heavy minerals	1	<1
Volcanic glass	4	1
Micro-Mn nodules	-	<1
Diatoms	76	96
Radiolarians	<1	<1
Silicoflagellates	<1	<1
Ebridians	-	<1

879-908 cm: Ash-bearing, diatomaceous ooze, light olive gray (5Y 5/2) gradationally changing at 890 cm to olive black (5Y 2/1); volcanic ash content increases with depth; fine stringers between 889-890 cm and 893-894 cm composed of diatomaceous ooze, yellowish gray (5Y 7/2); layer of volcanic ash between 897-901 cm; slightly bioturbated between 879-892 cm; sharp, bioturbated contact. NOTE: smear slide is biased toward diatoms.

smear slide:	904 cm
Quartz	8
Feldspar	1
Heavy minerals	<1
Clay	<1
Volcanic glass	12
Diatoms	79
Radiolarians	<1
Silicoflagellates	<<1

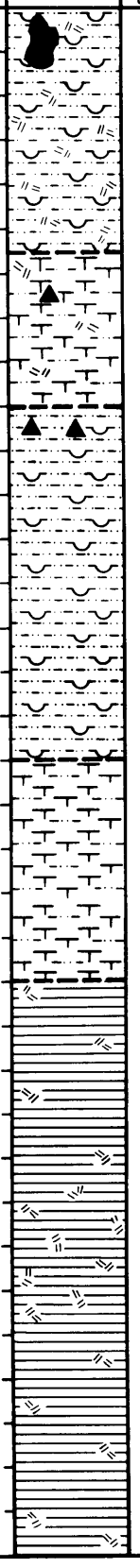
908-953 cm: Muddy, diatomaceous ooze, light olive gray (5Y 5/2); volcanic ash abundant between 925-927 cm; 1 cm sedimentary clast between 910-911 cm, composed predominantly of volcanic ash; moderately bioturbated between 908-910 cm.

smear slide:	931 cm
Quartz	10
Feldspar	1
Heavy minerals	<1
Clay	22
Volcanic glass	5
Diatoms	62
Radiolarians	<1
Silicoflagellates	<<1

Bottom topography: flat.

Logged by: Eggers, Kaharoeddin, Jones

ISLAS ORCADAS PC 1578-5



LATITUDE: 59°48.0′ S **WATER DEPTH:** 3968 M, 2170 FM

LONGITUDE: 13°28.7′ W **CORE LENGTH:** 556 CM

LITHOLOGIC DESCRIPTION

0-11 cm: Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash abundant throughout; 28 mm angular pebble coated with manganese oxides between 0-3 cm; slightly washed along the side between 0-11 cm; gradational contact.

smear slide:	3 cm
Quartz	2
Feldspar	2
Heavy minerals	2
Clay	42
Volcanic glass	6
Carbonate unspecified	11
Foraminifera	4
Diatoms	30
Radiolarians	1
Sponge spicules	<<1

11-18 cm: Marly, foraminiferal ooze, dark yellowish brown (10YR 4/2); volcanic ash common throughout; concentration of volcanic ash in 5 mm patches common between 11-13 cm; 7 mm angular lapilli between 12-13 cm; slightly washed along the side between 11-18 cm; gradational contact. NOTE: smear slide is biased toward clay.

smear slide:	12 cm
Quartz	4
Feldspar	2
Heavy minerals	2
Clay	42
Volcanic glass	9
Carbonate unspecified	7
Foraminifera	25
Diatoms	9
Radiolarians	<1
Sponge spicules	<1
Silicoflagellates	<<1

18-34 cm: Diatomaceous mud, dark yellowish brown (10YR 4/2); zones of higher volcanic ash content between 18-27 cm and 31-34 cm; 6 mm and 3 mm angular lapilli between 18-19 cm, partially coated with manganese oxides; slightly washed along the side between 18-34 cm; gradational contact.

smear slide:	32 cm
Quartz	5
Feldspar	3
Heavy minerals	1
Clay	43
Volcanic glass	9
Carbonate unspecified	6
Foraminifera	1
Diatoms	30
Radiolarians	2
Sponge spicules	<1
Ebridians	<<1

34-44 cm: Marly, foraminiferal ooze, dark yellowish brown (10YR 4/2); volcanic ash sparsely scattered throughout; slightly washed along the side between 34-44 cm; gradational contact. NOTE: smear slide is biased toward clay.

smear slide:	42 cm
Quartz	3
Feldspar	2
Heavy minerals	<1
Clay	47
Volcanic glass	12
Micro-Mn nodules	<<1
Carbonate unspecified	5
Foraminifera	20
Calcareous nannos	<<1
Diatoms	11
Radiolarians	<1
Sponge spicules	<<1

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Logged by: Goldstein, Graves

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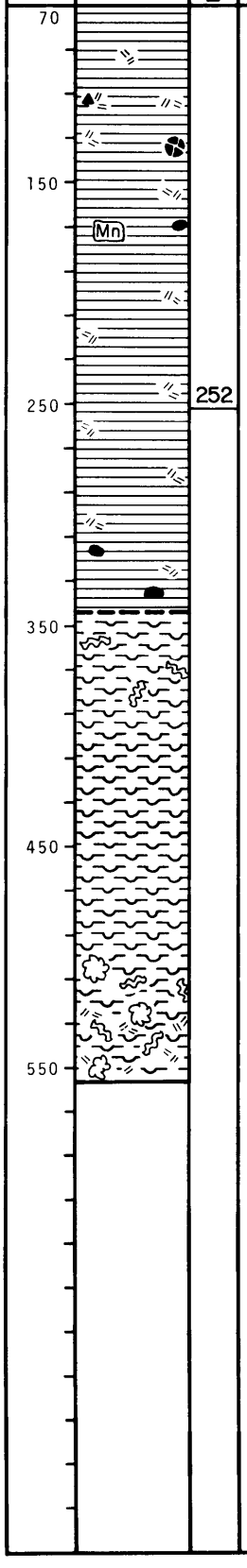
ISLAS ORCADAS PC 1578-5



LATITUDE: 59°48.0′ S WATER DEPTH: 3968 M, 2170 FM

LONGITUDE: 13°28.7′ W CORE LENGTH: 556 CM

LITHOLOGIC DESCRIPTION

44-343 cm: Pelagic clay, dark yellowish brown (10YR 4/2); volcanic ash common throughout; micro-manganese nodules sparsely scattered between 168-343 cm; zones of higher volcanic ash content between 53-59 cm and 89-107 cm; zone of higher diatom content between 80-95 cm; concentration of volcanic ash and lapilli, in 5 mm elongated patches, common between 110-113 cm; 20 mm sedimentary clast between 130-132 cm, composed of ash-bearing mud, dusky yellow (5Y 6/4) and dark yellowish brown (10YR 4/2), soft; 39 mm manganese nodule between 169-173 cm; pebbles coated with manganese oxides between 169-172 cm (29 mm), 317-320 cm (21 mm) and 334-335 cm (8 mm); gradational contact.

smear slides:	94 cm	(sed. clast) 132 cm	182 cm	335 cm
Quartz	15	10	10	7
Feldspar	4	3	1	2
Heavy minerals	1	2	2	2
Clay	38	62	81	73
Volcanic glass	20	15	5	8
Glauconite	-	<<1	<1	-
Micro-Mn nodules	-	<1	-	<1
Foraminifera	-	<<1	-	-
Diatoms	20	8	1	5
Radiolarians	2	<1	<1	3
Sponge spicules	<1	<<1	<1	<1
Silicoflagellates	<<1	-	-	<<1
Ebridians	<<1	<<1	-	<<1

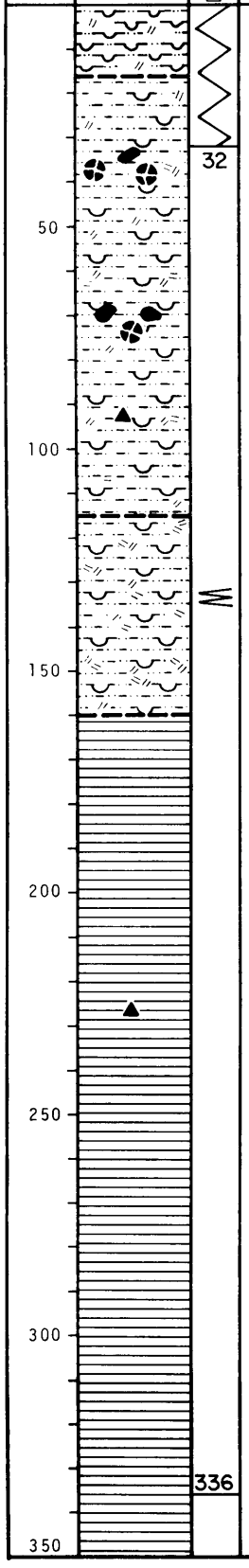
343-556 cm: Diatomaceous ooze, dusky yellow (5Y 6/4); mottled with yellowish gray (5Y 7/2) between 505-509 cm, 523-525 cm, 534-536 cm, and 548-555 cm; volcanic ash abundant between 525-553 cm; micro-manganese nodules concentrated in irregular stringers between 343-500 cm; moderately bioturbated between 343-371 cm, 506-509 cm and 536-556 cm; slightly bioturbated between 371-388 cm and 524-536 cm.

smear slides:	505 cm	553 cm
Quartz	10	1
Feldspar	3	2
Heavy minerals	<1	-
Clay	2	1
Volcanic glass	3	2
Micro-Mn nodules	<<1	-
Diatoms	74	86
Radiolarians	8	7
Sponge spicules	<<1	<<1
Silicoflagellates	<1	1

Bottom topography: top of a hill near a fracture zone; thin sediment cover.

Logged by: Goldstein, Graves

ISLAS ORCADAS PC 1578-6



LATITUDE: 59°29.2' S CORR. DEPTH: 4283 M, 2342 FM

LONGITUDE: 09°51.2' W CORE LENGTH: 641 CM

LITHOLOGIC DESCRIPTION

0-16 cm: Muddy, diatomaceous ooze, dark yellowish brown (10YR 4/2); volcanic ash (up to 4 mm, median diameter 1 mm) abundant throughout; moderately disturbed (washed) between 0-16 cm; gradational contact.

smear slide:	7 cm		
Quartz	4	Micro-Mn nodules	<<1
Feldspar	<1	Carbonate unspecified	1
Mica	<<1	Foraminifera	<<1
Heavy minerals	<1	Diatoms	50
Clay	40	Radiolarians	3
Volcanic glass	2	Silicoflagellates	<<1

16-115 cm: Diatomaceous mud, dark yellowish brown (10YR 4/2); volcanic ash common throughout; sedimentary clasts between 37-38 cm (10 mm) and 74-75 cm (10 mm), composed of volcanic ash, soft; 6 mm pebble between 36-37 cm; two 10 mm conglomerates encrusted with manganese oxides between 69-71 cm; 5 mm pumice between 92-93 cm; moderately disturbed (washed) between 16-32 cm; gradational contact.

smear slides:	24 cm	44 cm	113 cm
Quartz	4	3	4
Feldspar	1	1	<<1
Mica	<<1	-	<<1
Heavy minerals	1	<1	<<1
Clay	74	75	47
Volcanic glass	2	2	13
Micro-Mn nodules	<<1	<1	-
Diatoms	17	17	36
Radiolarians	1	2	<1
Sponge spicules	<<1	-	<<1
Silicoflagellates	-	<<1	-

115-160 cm: Ash-bearing, diatomaceous mud, dark yellowish brown (10YR 4/2); zone of higher volcanic ash content between 149-155 cm; moderately disturbed between 132-136 cm; gradational contact.

smear slide:	132 cm		
Quartz	7	Foraminifera	<<1
Feldspar	1	Diatoms	35
Heavy minerals	<1	Radiolarians	1
Clay	32	Sponge spicules	<<1
Volcanic glass	24		

160-503 cm: Pelagic clay, dark yellowish brown (10YR 4/2) gradationally changing at 312 cm to pale yellowish brown (10YR 6/2); micro-manganese nodules sparsely scattered throughout; volcanic ash abundant between 423-429 cm, sparsely scattered between 160-423 cm and 429-503 cm; 10 mm pumice coated with manganese oxides between 226-227 cm; gradational contact.

smear slides:	164 cm	326 cm	426 cm	437 cm
Quartz	7	6	3	7
Feldspar	<1	<<1	<<1	<<1
Heavy minerals	<<1	<1	<<1	<<1
Clay	89	91	79	89
Volcanic glass	4	3	17	4
Diatoms	<1	<<1	1	<1
Radiolarians	<<1	<<1	<<1	<<1
Sponge spicules	-	<1	<1	<<1
Silicoflagellates	-	-	-	<<1

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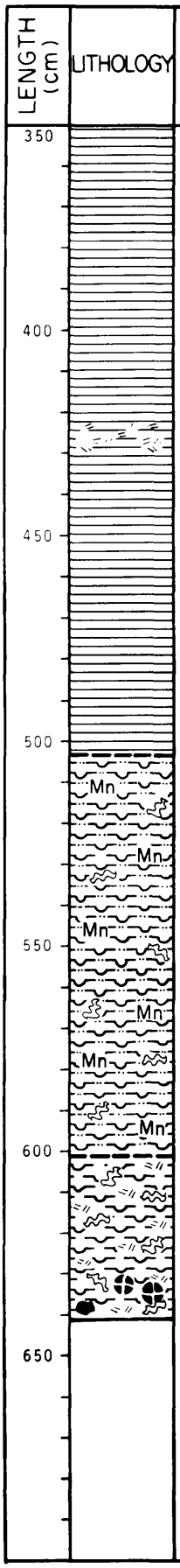
Logged by: Eggers, Jones, Graves

ISLAS ORCADAS PC 1578-6



LATITUDE: 59°29.2′ S CORR. DEPTH: 4283 M, 2342 FM

LONGITUDE: 09°51.2′ W CORE LENGTH: 641 CM

LITHOLOGIC DESCRIPTION

503-601 cm: Muddy, diatomaceous ooze, pale yellowish brown (10YR 6/2); micro-manganese nodules abundant throughout in fine, irregular stringers; volcanic ash sparsely scattered throughout; slightly bioturbated; gradational contact.

smear slide:	544 cm
Quartz	2
Feldspar	<<1
Mica	<<1
Clay	30
Volcanic glass	1
Diatoms	65
Radiolarians	1
Sponge spicules	<1
Silicoflagellates	1

601-641 cm: Ash-bearing, muddy, diatomaceous ooze, dark yellowish brown (10YR 4/2); micro-manganese nodules sparsely scattered throughout; zone of higher volcanic ash content between 614-637 cm; sedimentary clasts between 630-632 cm (15 mm) and 631-633 cm (15 mm), composed predominantly of volcanic ash, soft; 15 mm conglomerate between 638-640 cm, partially coated with manganese oxides; highly bioturbated.

smear slide:	628 cm
Quartz	9
Feldspar	2
Heavy minerals	2
Clay	20
Volcanic glass	15
Rock fragments	<1
Diatoms	44
Radiolarians	7
Sponge spicules	<1
Silicoflagellates	1

Bottom topography: rough bathymetry; small pond of sediment on top of a bathymetric high.

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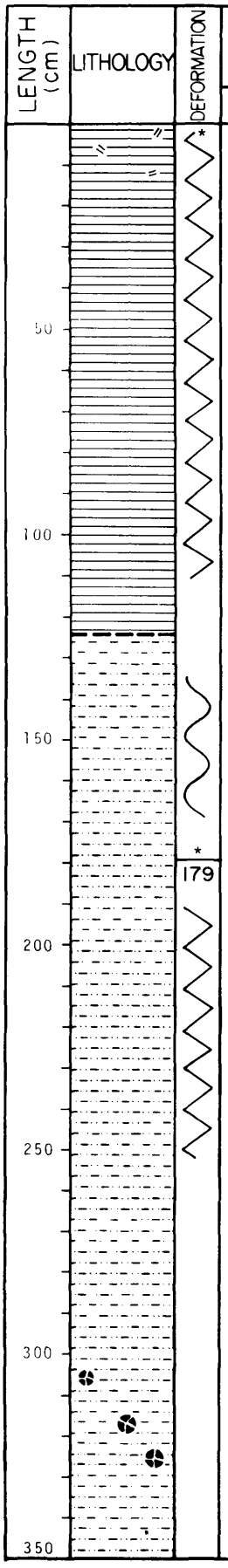
ISLAS ORCADAS PC 1578-7



LATITUDE: 60°00.4' S
LONGITUDE: 06°45.5' W
CORR. DEPTH: 5214 M, 2851 FM
CORE LENGTH: 788 CM

LITHOLOGIC DESCRIPTION

0-124 cm: Pelagic clay, light olive gray (5Y 5/2), gradationally changing between 0-13 cm and 106-124 cm to moderate olive brown (5Y 4/4); volcanic ash common between 0-13 cm, sparsely scattered between 106-121 cm; highly disturbed between 0-4 cm and 13-81 cm; moderately disturbed between 4-13 cm and 81-111 cm; gradational contact.

smear slides:	9 cm	28 cm	123 cm
Quartz	12	9	8
Feldspar	2	1	1
Mica	-	<1	<1
Heavy minerals	1	<1	1
Clay	71	89	88
Volcanic glass	11	1	1
Micro-Mn nodules	<1	-	1
Diatoms	3	<1	1
Radiolarians	<1	<1	-
Sponge spicules	<<1	<1	<1
Silicoflagellates	-	<1	-

124-361 cm: Mud, light olive gray (5Y 5/2); 3 mm laminae between 258-259 cm and 259-260 cm composed predominantly of silt; stringers between 285-290 cm and 297-301 cm composed predominantly of silt; sedimentary clasts up to 20 mm common between 304-326 cm, composed of mud with higher clay content, moderate olive brown (5Y 4/4), soft; moderately disturbed between 191-252 cm; slightly disturbed between 135-169 cm; gradational contact.

smear slides:	156 cm	252 cm	351 cm
Quartz	36	45	37
Feldspar	<<1	1	1
Mica	<1	1	3
Heavy minerals	3	5	3
Clay	57	43	52
Volcanic glass	4	2	2
Micro-Mn nodules	<1	1	-
Diatoms	<<1	2	2
Radiolarians	-	<<1	-
Sponge spicules	<<1	<1	<<1
Silicoflagellates	-	<<1	<<1
Ebridians	-	<<1	-

361-400 cm: Pelagic clay, moderate olive brown (5Y 4/4); 8 mm lens between 362-363 cm composed of mud, light olive gray (5Y 5/2); gradational contact.

smear slide:	370 cm
Quartz	4
Feldspar	1
Mica	<<1
Heavy minerals	3
Clay	87
Volcanic glass	4
Micro-Mn nodules	1
Zeolite	<1
Diatoms	<1

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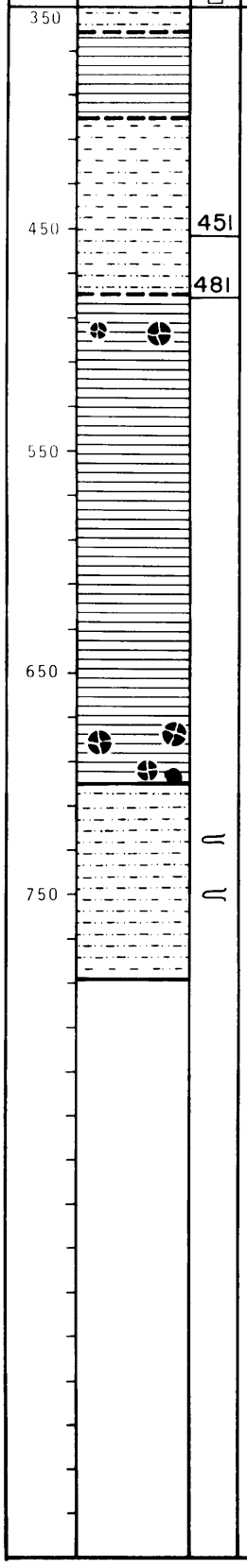
Logged by: Eggers, Goldstein, Graves

ISLAS ORCADAS PC 1578-7

(SC)

LATITUDE: 60°00.4' S CORR. DEPTH: 5214 M, 2851 FM

LONGITUDE: 06°45.5' W CORE LENGTH: 788 CM



LITHOLOGIC DESCRIPTION

400-479 cm: Mud, moderate olive brown (5Y 4/4); gradational contact.

smear slide:	421 cm
Quartz	22
Feldspar	1
Mica	<<1
Heavy minerals	4
Clay	70
Volcanic glass	3
Diatoms	<<1

479-698 cm: Pelagic clay, moderate olive brown, (5Y 4/4), gradationally changing to light olive gray (5Y 5/2) between 585-598 cm and 644-667 cm; volcanic ash sparsely scattered throughout; zones of increased silt content between 585-598 cm and 644-667 cm; sediment between 634-641 cm is highly to moderately compacted; sediment between 519-521 cm is moderately compacted; 4 mm stringer between 580-581 cm composed predominantly of silt; sedimentary clasts up to 20 mm abundant between 493-497 cm composed of mud, moderate olive brown (5Y 4/4), highly compacted, fragmented; sedimentary clasts up to 10 mm common between 677-698 cm, composed of mud, moderate olive brown (5Y 4/4), moderately to highly compacted; sedimentary clasts up to 10 mm common between 667-672 cm, composed of mud, moderate olive brown (5Y 4/4), soft; 10 mm sedimentary clast between 696-697 cm, composed of mud, moderate brown (5YR 3/4), slightly indurated; 12 mm angular pebble between 693-695 cm; sharp contact.

smear slides:	580 cm	587 cm	609 cm	652 cm	688 cm
Quartz	5	19	6	12	7
Feldspar	1	1	2	<1	2
Mica	<<1	<<1	-	-	-
Heavy minerals	2	<1	<1	1	2
Clay	89	75	88	84	84
Volcanic glass	3	5	4	3	5
Micro-Mn nodules	-	-	<1	<1	<1
Diatoms	-	-	<<1	-	<<1
Sponge spicules	-	-	<<1	-	<<1

698-788 cm: Mud, light olive gray (5Y 5/2); clay content increases with depth; slightly disturbed between 724-726 cm and 748-751 cm.

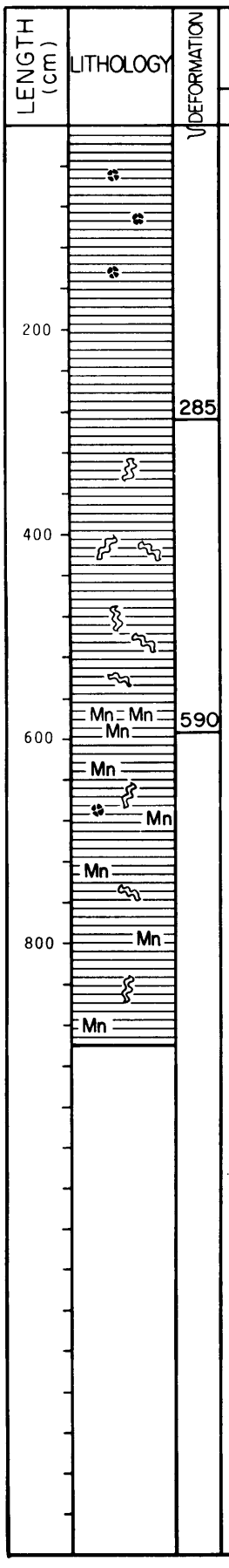
smear slides:	720 cm	780 cm
Quartz	24	7
Feldspar	2	2
Mica	<1	<<1
Heavy minerals	4	1
Clay	58	86
Volcanic glass	2	1
Micro-Mn nodules	<1	<1
Diatoms	10	3
Radiolarians	<<1	<<1
Sponge spicules	<<1	<<1
Silicoflagellates	-	<<1

Bottom topography: flat, with occasional hills.

*NOTE: Sediment between 0-1 cm and 178-179 cm is bagged.

Logged by: Eggers, Goldstein, Graves

ISLAS ORCADAS PC 1578-8



LATITUDE: 60°33.3′ S CORR. DEPTH: 5130 M, 2805 FM

LONGITUDE: 03°38.5′ W CORE LENGTH: 896 CM

LITHOLOGIC DESCRIPTION

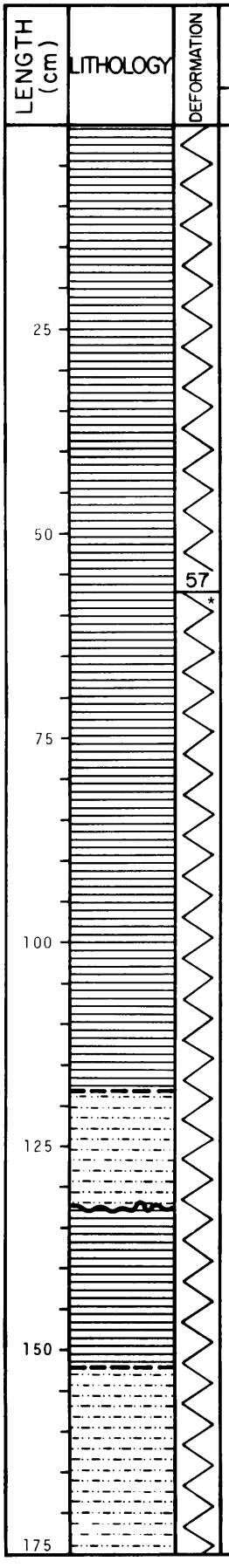
0-896 cm: Pelagic clay, dark yellowish brown (10YR 4/2), gradationally changing to dusky yellow (5Y 6/4) at 460 cm; between 0-250 cm contains diatoms up to 7%; slightly stained with manganese oxides between 480-555 cm; moderately stained with manganese oxides between 620-896 cm; micro-manganese nodules common between 569-580 cm, and between 590-600 cm; elongated, 1 cm patch of concentration of volcanic ash between 56-58 cm; stringers of volcanic ash between 290-293 cm; sedimentary clasts (median diameter 6 mm) sparsely scattered between 45-146 cm, composed of clay-bearing volcanic ash, soft; sedimentary clast between 669-670 cm (8 mm) composed predominantly of volcanic ash, moderate brown (5YR 4/4) compacted; highly bioturbated between 409-420 cm; moderately bioturbated between 470-510 cm; slightly bioturbated between 320-400 cm, between 510-570 cm, and between 600-896 cm; slightly disturbed (watery) between 0-14 cm; slightly washed along the side between 14-24 cm.

smear slides:	148 cm	351 cm	426 cm	552 cm	602 cm	788 cm
Quartz	9	4	1	6	3	6
Feldspar	<1	<1	<1	<1	<1	1
Mica	<1	<1	<1	<1	<1	<1
Heavy minerals	3	3	1	1	1	2
Clay	80	88	94	89	91	87
Volcanic glass	3	4	3	4	3	3
Micro-Mn nodules	-	-	1	<1	2	-
Zeolite	-	-	<1	<1	<1	1
Diatoms	5	1	<1	<1	<1	<<1
Radiolarians	<1	<1	-	-	-	-
Sponge spicules	<1	<1	<<1	<<1	<<1	-

Bottom topography: sediment pocket in rough bathymetry.

Logged by: Graves, Goldstein

ISLAS ORCADAS PC 1578-9



LATITUDE: 61°57.3′ S **WATER DEPTH:** 5201 M, 2844 FM

LONGITUDE: 03°34.5′ W **CORE LENGTH:** 362 CM

LITHOLOGIC DESCRIPTION

NOTE: According to deck-log data, at least 10 cm of sediment from the core top were lost overboard during separation of the bent core barrel pipes. Since the exact amount of sediment loss cannot be determined, the top of the sediment column within the first section of core liner has been assigned 0 cm, although it is not the "true" core top.

The extent of moderate disturbance throughout this core is the result of the core liner having been severely damaged due to freezing and expansion of the sediment within, requiring transfer of the sediment, in short segments, to new liners.

0-118 cm: Pelagic clay, dark yellowish brown (10YR 4/2), gradationally changing to light olive gray (5Y 5/2) between 29-62 cm and 71-84 cm; the gradational change to light olive gray corresponds with an increase in silt content; gradational contact.

smear slides:	5 cm	84 cm		5 cm	84 cm
Quartz	15	12	Micro-Mn nodules	<1	1
Feldspar	2	3	Zeolite	-	1
Mica	3	2	Carbonate unspecified	-	<1
Heavy minerals	9	5	Foraminifera	<1	<1
Clay	61	72	Diatoms	2	<1
Volcanic glass	3	3	Radiolarians	3	1
Glauconite	1	<1	Sponge spicules	1	<1

118-132 cm: Mud, light olive gray (5Y 5/2); sharp, sinuous contact.

smear slide:	126 cm		
Quartz	4	Glauconite	<1
Feldspar	4	Zeolite	1
Mica	2	Diatoms	4
Heavy minerals	5	Radiolarians	<1
Clay	78	Sponge spicules	<1
Volcanic glass	2	Silicoflagellates	<<1

132-152 cm: Pelagic clay, dark yellowish brown (10YR 4/2); gradational contact.

smear slide:	150 cm
Quartz	8
Feldspar	4
Mica	1
Heavy minerals	5
Clay	76
Volcanic glass	3
Zeolite	1
Foraminifera	<1
Diatoms	2
Radiolarians	<1
Sponge spicules	<1
Silicoflagellates	<<1

152-176 cm: Mud, light olive gray (5Y 5/2), mixed with dark yellowish brown (10YR 4/2); clay content varies with depth; gradational contact.

smear slide:	171 cm
Quartz	25
Feldspar	2
Mica	1
Heavy minerals	6
Clay	62
Volcanic glass	3
Zeolite	1
Foraminifera	<1
Diatoms	<1

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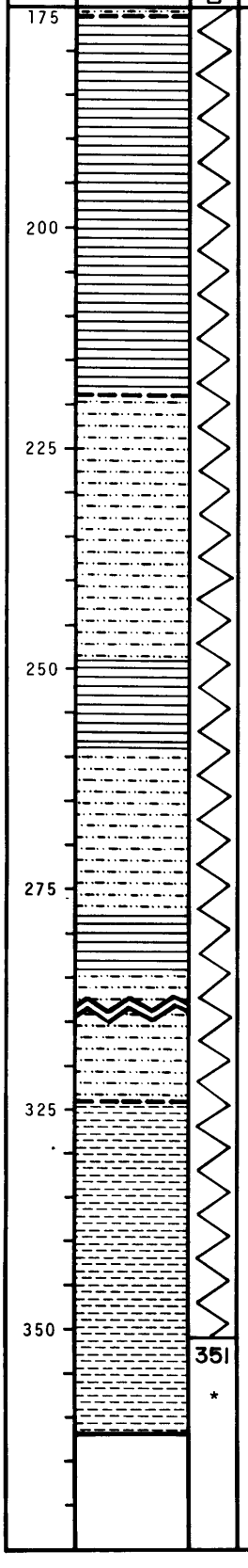
Logged by: Graves, Goldstein

ISLAS ORCADAS PC 1578-9



LATITUDE: 61°57.3′ S **WATER DEPTH:** 5201 M, 2844 FM

LONGITUDE: 03°34.5′ W **CORE LENGTH:** 362 CM

LITHOLOGIC DESCRIPTION

176-219 cm: Pelagic clay, dark yellowish brown (10YR 4/2); gradational contact.

smear slide:	206 cm
Quartz	6
Feldspar	2
Mica	1
Heavy minerals	3
Clay	81
Volcanic glass	3
Glauconite	<1
Micro-Mn nodules	1
Zeolite	1
Diatoms	2
Radiolarians	<1
Sponge spicules	<1

219-324 cm: Mud, light olive gray (5Y 5/2); layers of clay, dark yellowish brown (10YR 4/2), between 249-259 cm, 278-284 cm; increased clay content between 304-308 cm; increased silt content with depth; gradational contact.

smear slides:	231 cm	252 cm	268 cm	281 cm	315 cm
Quartz	32	3	39	5	37
Feldspar	4	3	3	3	2
Mica	8	<1	2	<1	2
Heavy minerals	12	2	13	3	8
Clay	36	87	35	85	45
Volcanic glass	4	3	4	2	3
Glauconite	2	-	-	-	<1
Micro-Mn nodules	1	1	2	2	3
Zeolite	-	1	2	<1	-
Diatoms	<1	<1	-	<1	<1
Radiolarians	<1	<1	-	-	-
Sponge spicules	1	-	<1	<1	<1

324-362 cm: Silt, light olive gray (5Y 5/2).

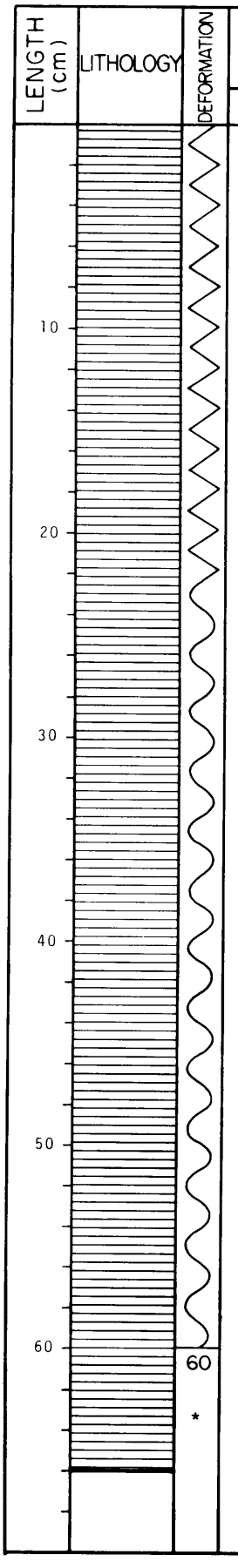
smear slide:	332 cm
Quartz	75
Feldspar	4
Mica	1
Heavy minerals	12
Clay	5
Volcanic glass	2
Glauconite	1
Micro-Mn nodules	<<1
Sponge spicules	<<1

Bottom topography: flat; many good reflectors; good layering.

*NOTE: Sediment between 57-60 cm and 351-362 cm is bagged.

Logged by: Graves, Goldstein

ISLAS ORCADAS PC 1578-10



LATITUDE: 63°32.1' S CORR. DEPTH: 5128 M, 2804 FM

LONGITUDE: 06°26.7' W CORE LENGTH: 66 CM

LITHOLOGIC DESCRIPTION

0-66 cm: Pelagic clay, dark yellowish brown (10YR 4/2) gradationally changing between 9-21 cm and 31-49 cm to light olive gray (5Y 5/2); color change coincides with an increase of silt content; moderately disturbed (washed) between 0-22 cm; slightly disturbed (washed) between 22-66 cm.

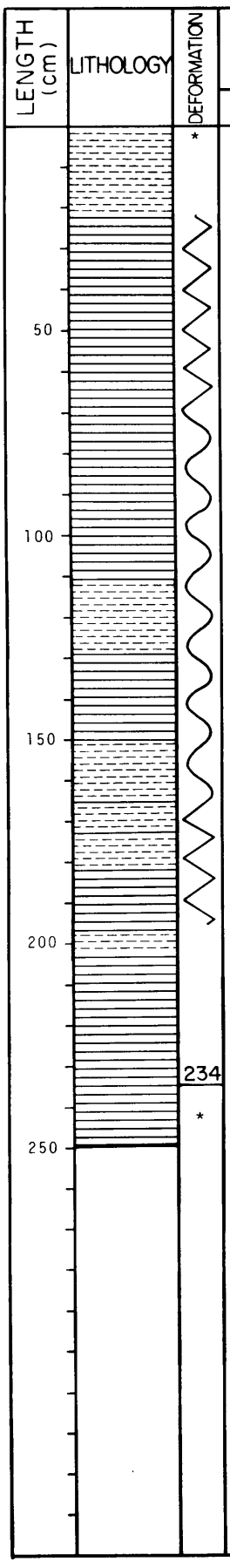
smear slides:	4 cm	10 cm	36 cm	52 cm
Quartz	19	45	30	3
Feldspar	2	1	3	2
Mica	<1	7	9	-
Heavy minerals	2	5	6	3
Clay	76	30	42	91
Volcanic glass	1	2	1	1
Rock fragments	-	-	-	<<1
Glauconite	-	-	<<1	-
Micro-Mn nodules	-	-	<1	-
Diatoms	<<1	7	3	<1
Radiolarians	<<1	1	<1	-
Sponge spicules	<1	2	5	<1
Silicoflagellates	<<1	<<1	-	-
Ebridians	-	-	1	-

Bottom topography: flat.

*NOTE: Sediment between 60-66 cm is bagged.

Logged by: Eggers, Graves, Socci

ISLAS ORCADAS PC 1578-11



LATITUDE: 64°58.7' S CORR. DEPTH: 4987 M, 2727 FM

LONGITUDE: 07°27.1' W CORE LENGTH: 249 CM

LITHOLOGIC DESCRIPTION

0-249 cm: Pelagic clay, light olive gray (5Y 5/2), gradationally changing between 70-79 cm and 129-135 cm to moderate olive brown (5Y 4/4); silt content increases below 215 cm; layers of silt, with gradational contacts, between 0-21 cm, 112-128 cm, 151-164 cm, 167-171 cm, 174-181 cm, and 198-201 cm; slightly stained with manganese oxides between 70-79 cm; laminae up to 0.4 cm common between 112-128 cm, rich in heavy minerals; cross-laminated laminae (up to 1 mm) between 115-121 cm and 124-126 cm, rich in heavy minerals; highly disturbed between 21-69 cm; moderately disturbed between 164-195 cm; slightly disturbed between 69-164 cm; moderately washed along the side between 11-21 cm; slightly washed along the side between 3-11 cm.

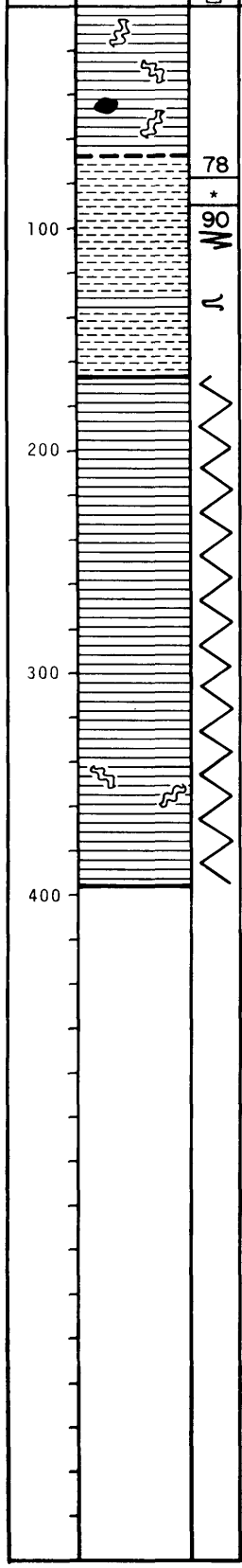
smear slides:	(layer) 14 cm	74 cm	(layer) 118 cm	132 cm	(layer) 179 cm	188 cm	226 cm
Quartz	61	17	74	17	71	19	25
Feldspar	1	1	3	<1	2	1	1
Mica	6	2	3	<<1	3	<1	1
Heavy minerals	17	4	8	4	22	6	9
Clay	4	73	7	75	1	72	60
Volcanic glass	4	2	3	2	1	2	4
Micro-Mn nodules	-	<1	<<1	-	-	-	-
Diatoms	4	1	<<1	2	<<1	-	-
Radiolarians	<1	<<1	<<1	-	-	-	-
Sponge spicules	3	<1	2	<<1	<<1	-	<<1
Silicoflagellates	<<1	-	-	<<1	-	-	-

Bottom topography: flat, abyssal plain.

*NOTE: Sediment between 0-3 cm and 234-249 cm is bagged.

Logged by: Eggers, Socci, Goldstein

ISLAS ORCADAS PC 1578-12



LATITUDE: 66°58.9′ S CORR. DEPTH: 4806 M, 2628 FM

LONGITUDE: 07°45.2′ W CORE LENGTH: 397 CM

LITHOLOGIC DESCRIPTION

0-68 cm: Pelagic clay, moderate olive brown (5Y 4/4); slightly stained with manganese oxides; 3 mm irregular stringer rich in manganese oxides between 16-19 cm; 8 mm angular pebble between 45-46 cm, partially coated with manganese oxides; moderately bioturbated; gradational contact.

smear slides:	9 cm	50 cm
Quartz	19	17
Feldspar	<1	1
Mica	<1	<1
Heavy minerals	4	4
Clay	71	78
Volcanic glass	1	<1
Micro-Mn nodules	<<1	-
Diatoms	4	<<1
Radiolarians	<1	<<1
Sponge spicules	1	-
Silicoflagellates	<<1	-
Ebridians	<<1	-

68-167 cm: Silt, light olive gray (5Y 5/2); layer of clay between 130-137 cm, moderate olive brown (5Y 4/4), upper contact of layer is sharp; grain size grades from silt at 68 cm to very fine sand at 130 cm; highly disturbed between 101-109 cm, disturbance is associated with the core catcher being lodged in the core; slightly disturbed between 130-137 cm due to freezing of the core; moderately washed along the side between 146-160 cm; slightly washed along the side between 109-130 cm; sharp contact.

smear slides:	125 cm	(layer) 131 cm	141 cm	157 cm
Quartz	65	24	69	71
Feldspar	5	1	3	4
Mica	4	3	4	2
Heavy minerals	23	7	17	22
Clay	2	63	6	1
Volcanic glass	1	2	1	<1
Micro-Mn nodules	-	<1	-	-
Sponge spicules	-	<1	-	<1

167-397 cm: Pelagic clay, moderate olive brown (5Y 4/4); zones of higher silt content between 321-332 cm, 347-360 cm and 380-387 cm; micro-manganese nodules sparsely scattered throughout; slightly bioturbated between 347-360 cm; moderately disturbed due to freezing of the core.

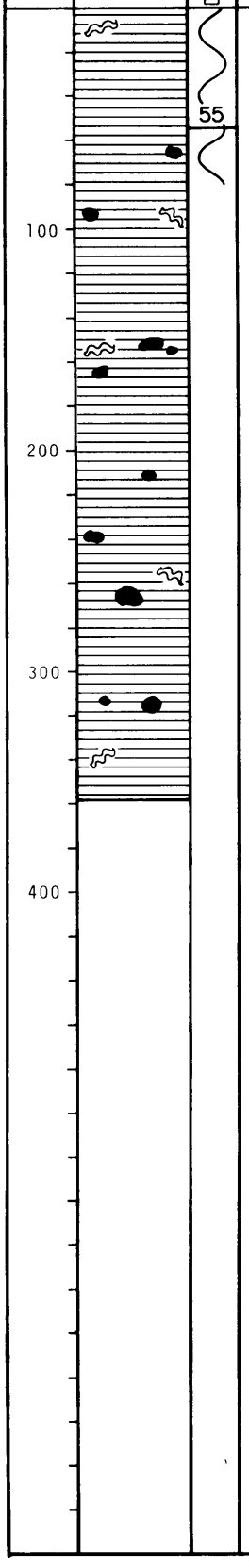
smear slides:	170 cm	239 cm	(zone) 325 cm	370 cm
Quartz	22	27	60	19
Feldspar	1	1	1	<1
Mica	2	1	5	<1
Heavy minerals	7	7	28	5
Clay	68	64	4	75
Volcanic glass	<1	<1	2	1
Micro-Mn nodules	<1	<<1	-	<1

Bottom topography: flat.

*NOTE: Sediment between 78-90 cm is bagged.

Logged by: Socci, Eggers, Goldstein

ISLAS ORCADAS PC 1578-14



LATITUDE: 68°41.8′ S CORR. DEPTH: 4256 M, 2327 FM

LONGITUDE: 10°13.5′ W CORE LENGTH: 357 CM

LITHOLOGIC DESCRIPTION

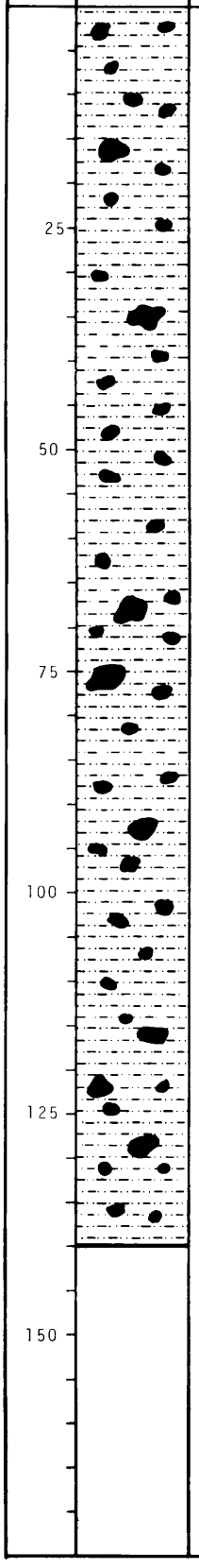
0-357 cm: Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered throughout; 20 mm subangular pebble between 67-69 cm; pebbles highly encrusted with micro-manganese nodules and manganese oxides between 91-94 cm (25 mm), 153-154 cm (10 mm and 5 mm), 162-163 cm (10 mm), 211-212 cm (8 mm), 237-240 cm (30 mm), 261-267 cm (55 mm), 315-317 cm (20 mm), and 317-319 cm (15 mm); slightly bioturbated throughout; slightly disturbed between 0-80 cm.

smear slides:	8 cm	111 cm	291 cm
Quartz	10	18	10
Feldspar	1	1	1
Mica	-	1	<1
Heavy minerals	5	7	5
Clay	70	71	81
Volcanic glass	2	2	2
Micro-Mn nodules	-	<1	<1
Carbonate unspecified	8	-	1
Foraminifera	3	-	-
Diatoms	1	-	-
Radiolarians	<1	-	-
Sponge spicules	<<1	-	-

Bottom topography: flat; slightly rolling hills.

Logged by: Eggers, Graves

ISLAS ORCADAS PC 1578-16



LATITUDE: 70°36.7′ S CORR. DEPTH: 366 M, 200 FM

LONGITUDE: 10°03.8′ W CORE LENGTH: 140 CM

LITHOLOGIC DESCRIPTION

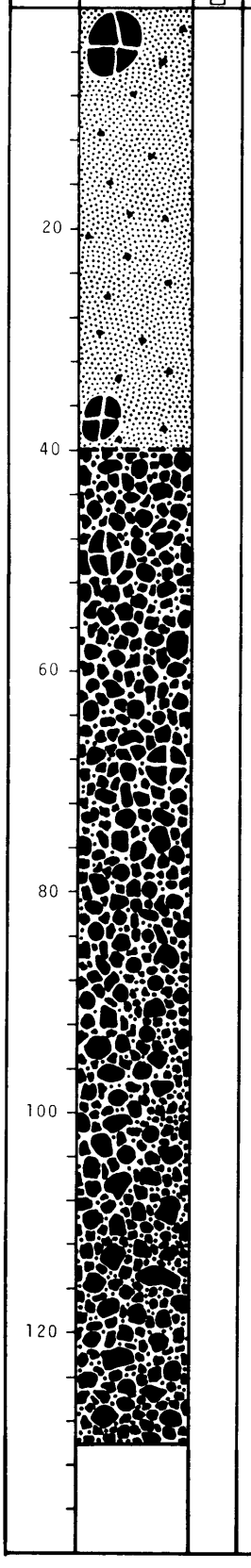
0-140 cm: Pebbly mud, olive black (5Y 2/1); median diameter of pebbles 10 mm; erratic occurrences of larger pebbles, subangular to subrounded, between 16-18 cm (20 mm), 33-35 cm (20 mm), 65-68 cm (30 mm), 74-77 cm (25 mm), 90-93 cm (28 mm), 118-122 cm (2 pebbles, 40 mm), 120-123 cm (30 mm) and 128-131 cm (25 mm); zones of glauconitic, sandy mud containing abundant foraminifera between 8-12 cm, 24-38 cm, and 44-51 cm. NOTE: smear slides do not include particles greater than 2 mm. Also, forams not present on smear slide at 8 cm.

smear slides:	8 cm	87 cm	138 cm
Quartz	17	30	13
Feldspar	1	1	1
Mica	<1	1	1
Heavy minerals	6	5	5
Clay	66	50	68
Volcanic glass	2	3	3
Glauconite	4	5	3
Micro-Mn nodules	1	-	1
Carbonate unspecified	3	5	4
Diatoms	<1	1	1
Sponge spicules	-	<1	<1

Bottom topography: slightly undulating bottom.

Logged by: Eggers, Graves

ISLAS ORCADAS PC 1578-18



LATITUDE: 70°33.6′ S
LONGITUDE: 10°10.9′ W
CORR. DEPTH: 1039 M, 568 FM
CORE LENGTH: 131 CM

LITHOLOGIC DESCRIPTION

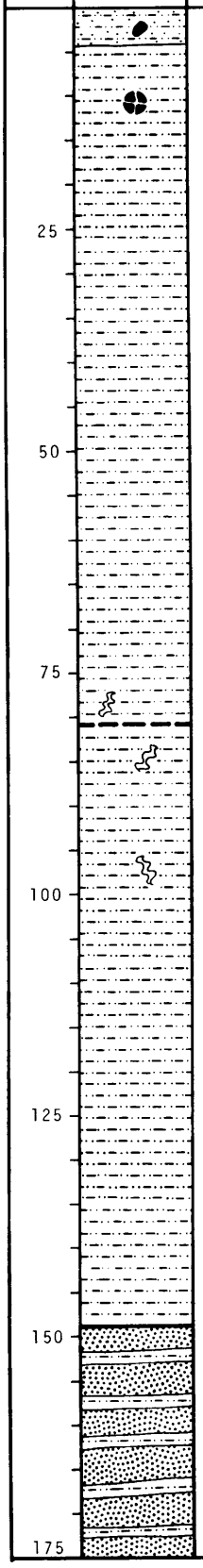
0-40 cm: Sand, dark gray (N3); size increases gradationally from fine sand at the top to very coarse sand at the bottom; 50 mm sedimentary clast between 0-5 cm, composed of very fine sand; 40 mm sedimentary clast between 35-39 cm composed of diatomaceous mud; abundance of very fine pebbles increases with depth; gradational contact.

40-131 cm: Medium pebbles, dark gray (N3); pebbles are subangular to subrounded, poorly sorted; sedimentary clasts between 49-51 cm (20 mm) and 66-70 cm (40 mm) composed of mud.

Bottom topography: cored on the Antarctic continental slope.

Logged by: Kaharoeddin, Eggers, Bergen

ISLAS ORCADAS PC 1578-19



LATITUDE: 70°32.4' S CORR. DEPTH: 1339 M, 732 FM

LONGITUDE: 10°16.4' W CORE LENGTH: 499 CM

LITHOLOGIC DESCRIPTION

0-81 cm: Mud, moderate olive brown (5Y 4/4); gradationally changing at 18 cm to olive gray (5Y 3/2); unit has higher diatom content than underlying unit; layer of sandy mud between 0-4 cm; sediment compacted between 7-8 cm; 10 mm sedimentary clast between 10-11 cm, composed of mud, moderate olive brown (5Y 4/4), slightly compacted, fragmented; 8 mm angular pebble between 2-3 cm; slightly bioturbated between 78-81 cm; gradational contact.

smear slides:	(layer) 3 cm	6 cm
Quartz	50	39
Feldspar	1	3
Mica	<1	1
Heavy minerals	8	9
Clay	26	33
Volcanic glass	5	<1
Glauconite	1	3
Foraminifera	<<1	-
Diatoms	5	8
Radiolarians	1	2
Sponge spicules	3	2
Silicoflagellates	<<1	<<1
Ebridians	<<1	-

81-149 cm: Mud, olive gray (5Y 3/2); clay content varies with depth; slightly bioturbated between 81-98 cm; sharp contact.

smear slides:	85 cm	96 cm	130 cm
Quartz	24	30	36
Feldspar	1	2	3
Mica	<1	<1	<1
Heavy minerals	6	10	8
Clay	67	54	45
Volcanic glass	2	2	3
Glauconite	<1	<1	2
Micro-Mn nodules	-	-	<<1
Carbonate unspecified	<1	1	<1
Foraminifera	-	<1	-
Diatoms	<1	<<1	2
Radiolarians	-	-	<<1
Sponge spicules	<1	1	1

149-180 cm: Fine sand, olive gray (5Y 3/2); mud in layers up to 2 cm interspersed between 149-173 cm; layer of medium sand, poorly sorted, between 173-180 cm (top boundary of this layer is sharp); sharp, irregular contact. NOTE: smear slide is biased toward clay.

smear slide:	153 cm
Quartz	47
Feldspar	5
Mica	<1
Heavy minerals	12
Clay	25
Volcanic glass	3
Rock fragments	<1
Glauconite	5
Carbonate unspecified	<<1
Foraminifera	<1
Diatoms	2
Radiolarians	<<1
Sponge spicules	1

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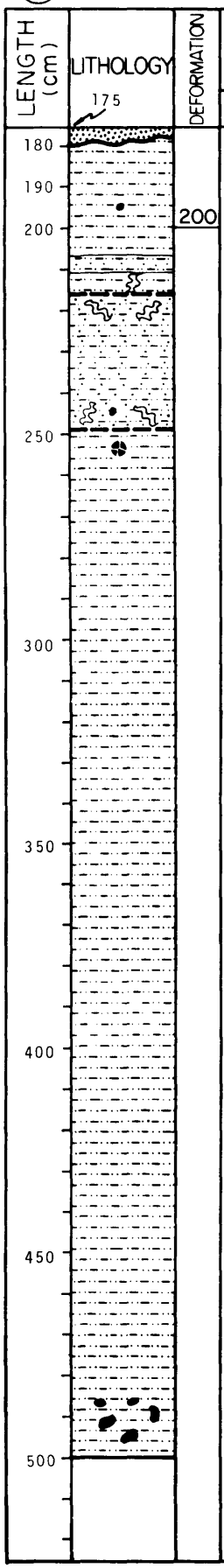
Logged by: Eggers, Graves, Bergen, Kaharoeddin

ISLAS ORCADAS PC 1578-19

(SC)



LATITUDE: 70°32.4' S CORR. DEPTH: 1339 M, 732 FM

LONGITUDE: 10°16.4' W CORE LENGTH: 499 CM

LITHOLOGIC DESCRIPTION

180-216 cm: Mud, olive gray (5Y 3/2); 4 cm layer of sandy mud between 207-211 cm; lenses of sandy silt between 186-188 cm (2 cm) and 189-191 cm (1.5 cm); 0.3 cm lamina of sandy silt between 181-182 cm; 5 mm subrounded pebble between 194-195 cm; slightly bioturbated between 211-216 cm; gradational contact.

smear slides:	(layer) 207 cm	214 cm
Quartz	40	32
Feldspar	2	2
Mica	1	1
Heavy minerals	12	6
Clay	40	54
Volcanic glass	2	3
Rock fragments	<1	-
Glauconite	<1	-
Micro-Mn nodules	-	1
Carbonate unspecified	<1	1
Foraminifera	2	<<1
Sponge spicules	1	<1

216-249 cm: Sandy mud, grayish olive (10Y 4/2); 0.4 cm lamina of sandy mud, olive gray (5Y 3/2), between 223-224 cm; 10 mm pebble between 245-246 cm; moderately bioturbated between 216-220 cm and 245-248 cm; gradational contact.

smear slide:	233 cm
Quartz	45
Feldspar	4
Mica	1
Heavy minerals	10
Clay	31
Volcanic glass	2
Glauconite	2
Carbonate unspecified	<1
Foraminifera	3
Diatoms	<1
Radiolarians	<<1
Sponge spicules	2
Ebridians	<<1

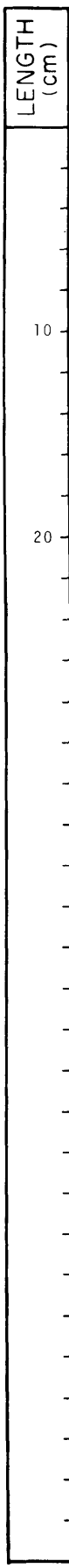
249-499 cm: Mud, light olive gray (5Y 5/2), gradationally changing at 273 cm to olive gray (5Y 3/2); stringers of silt, up to 2 mm wide, common between 344-359 cm, 391-417 cm and 456-470 cm; 20 mm sedimentary clast between 252-254 cm, composed of muddy sand, moderate olive brown (5Y 4/4), soft; pebbles ranging from 10 mm to 35 mm abundant between 486-495 cm.

smear slides:	264 cm	424 cm	476 cm
Quartz	40	51	45
Feldspar	1	2	2
Mica	<1	<1	<1
Heavy minerals	8	18	12
Clay	49	28	40
Volcanic glass	2	1	1
Glauconite	<1	<<1	<1
Carbonate unspecified	-	<<1	<<1
Foraminifera	-	-	<<1
Diatoms	<<1	<1	<<1
Sponge spicules	<1	<1	<1

Bottom topography: cored on the Antarctic continental slope.

Logged by: Eggers, Graves, Bergen, Kaharoeddin

ISLAS ORCADAS PC 1578-20



LATITUDE: 70°28.3' S CORR. DEPTH: 1734 M, 948 FM

LONGITUDE: 10°23.0' W CORE LENGTH: 19 CM

LITHOLOGIC DESCRIPTION

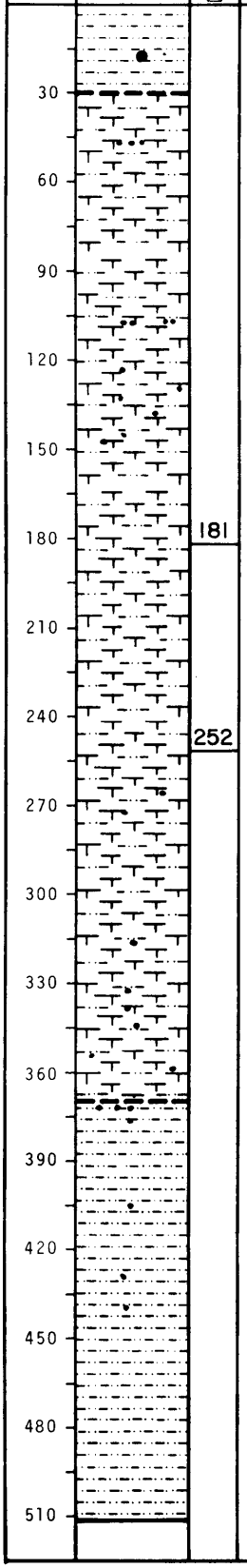
0-19 cm: Mud, light olive gray (5Y 5/2); slightly stained with manganese oxides. NOTE: although the sediment in the liner is apparently stratigraphically intact, it actually may be severely disturbed due to the possibility that the sediment may have resettled to a 19 cm long column after having been scattered throughout the upper part of the empty core liner. According to the deck-log, this was a two-pipe core (each pipe being 6 meters long), and was determined to have penetrated the bottom to a depth of approximately 50 to 80 cm. The 19 cm core section represents the bottom 19 cm of the 600 cm long upper core pipe. The piston did not "breakaway" upon pull-out, and was found at the top of the upper core pipe. Sediment was also recovered, and bagged, from the bottom of the lower core pipe, and from the coupling collar between the two pipes. (A description of the lowermost bagged sediment appears on page 153.) The total amount of bagged sediment is equivalent to about 25 cm of liner sediment. Thus, the positions of the bagged sediment, the 19 cm liner section (which was positioned near the center of the 12 meters of core pipe), and an additional amount (approximately 10 cm) of sediment which fell overboard upon uncoupling of the core pipes seem to indicate the possibility of severe disturbance to the liner-recovered sediment.

smear slide:	7 cm
Quartz	20
Feldspar	2
Mica	1
Heavy minerals	7
Clay	61
Volcanic glass	2
Diatoms	4
Radiolarians	1
Sponge spicules	2

Bottom topography: cored on the Antarctic continental slope.

Logged by: Graves, Eggers

ISLAS ORCADAS PC 1578-22



LATITUDE: 69°55.1' S CORR. DEPTH: 2820 M, 1542 FM

LONGITUDE: 10°57.8' W CORE LENGTH: 512 CM

LITHOLOGIC DESCRIPTION

0-30 cm: Mud, olive gray (5Y 4/1); increasing foraminiferal content with depth; 32 mm subangular basaltic pebble between 17-20 cm; gradational contact.

smear slides:	7 cm	21 cm
Quartz	37	35
Feldspar	2	1
Mica	2	<<1
Heavy minerals	7	1
Clay	48	51
Volcanic glass	<1	2
Carbonate unspecified	<<1	2
Foraminifera	4	8
Diatoms	<<1	-
Sponge spicules	<1	<<1

30-370 cm: Marly, foraminiferal ooze, light olive gray (5Y 5/2); decreasing foraminiferal content with depth between 350-370 cm; three angular basaltic pebbles (up to 18 mm) between 47-49 cm; four angular pebbles of sandstone (up to 20 mm) between 107-109 cm; pebbles up to 16 mm common between 123-150 cm, composed of weathered siltstone, sandstone, limestone, and igneous rocks; basaltic pebbles between 264-265 cm (4 mm), 272-274 cm (20 mm), 318-319 cm (5 mm), 335-336 cm (8 mm), 338-340 cm (14 mm), 353-355 cm (15 mm), and 359-360 cm (4 mm); gradational contact.

smear slides:	40 cm	162 cm	282 cm
Quartz	16	25	26
Feldspar	<1	1	<1
Mica	-	1	<1
Heavy minerals	4	5	3
Clay	24	33	35
Volcanic glass	3	<1	1
Glauconite	<<1	<<1	-
Micro-Mn nodules	-	-	<<1
Carbonate unspecified	9	15	5
Foraminifera	42	20	30
Diatoms	1	-	-
Sponge spicules	1	-	-

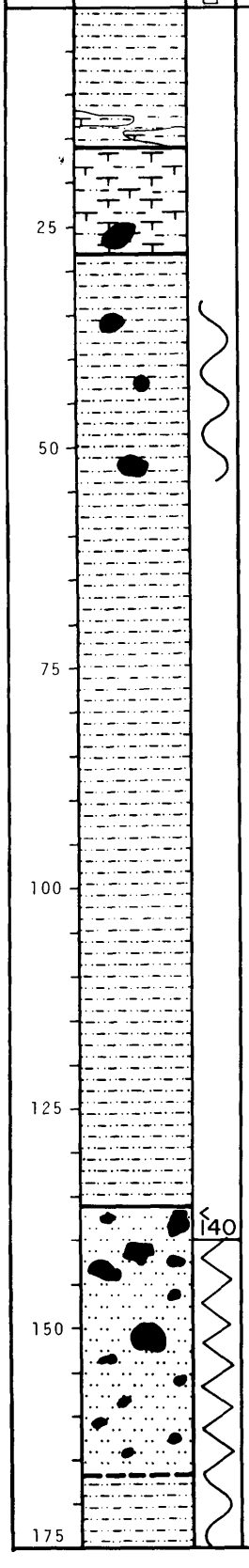
370-512 cm: Mud, light olive gray (5Y 5/2); subangular basaltic pebbles (up to 8 mm) abundant between 370-371 cm; subangular basaltic pebbles between 376-377 cm (3 mm) and 438-439 cm (3 mm); angular basaltic pebbles between 404-405 cm (9 mm) and 430-432 cm (9 mm).

smear slides:	396 cm	497 cm
Quartz	38	40
Feldspar	1	1
Mica	1	2
Heavy minerals	12	8
Clay	44	48
Volcanic glass	<1	1
Glauconite	<1	<1
Carbonate unspecified	3	-
Foraminifera	1	-
Sponge spicules	-	<1

Bottom topography: flank of submarine canyon.

Logged by: Goldstein, Kaharoeddin, Watkins, Redmond, Graves

ISLAS ORCADAS PC 1578-24



LATITUDE: 69°58.2′ S CORR. DEPTH: 4078 M, 2230 FM

LONGITUDE: 12°17.0′ W CORE LENGTH: 1068 CM

LITHOLOGIC DESCRIPTION

0-16 cm: Mud, light olive gray (5Y 5/2); lenses of marly, foraminiferal ooze between 12-16 cm; sharp contact.

smear slide:	7 cm		
Quartz	48	Glauconite	<<1
Feldspar	5	Micro-Mn nodules	<<1
Mica	<1	Carbonate unspecified	3
Heavy minerals	15	Diatoms	<<1
Clay	26	Sponge spicules	<<1
Volcanic glass	3		

16-28 cm: Marly, foraminiferal ooze, light olive gray (5Y 5/2); 35 mm rounded pebble between 24-28 cm, encrusted with manganese oxides; sharp contact.

smear slide:	22 cm		
Quartz	30	Carbonate unspecified	6
Feldspar	1	Foraminifera	37
Heavy minerals	5	Diatoms	<1
Clay	19	Radiolarians	<<1
Volcanic glass	2	Sponge spicules	<1
Glauconite	<1		

28-136 cm: Mud, light olive gray (5Y 5/2); zone of higher silt content between 128-136 cm; pebbles encrusted with manganese oxides between 30-32 cm (20 mm), 42-43 cm (8 mm) and 51-53 cm (20 mm); slightly washed along the side between 80-102 cm, 106-113 cm and 120-129 cm; slightly disturbed due to freezing between 33-54 cm; sharp contact.

smear slides:	37 cm	107 cm		37 cm	107 cm
Quartz	53	25	Volcanic glass	-	1
Feldspar	2	1	Glauconite	<1	<1
Mica	1	2	Micro-Mn nodules	<1	<1
Heavy minerals	8	6	Carbonate unspecified	<<1	-
Clay	35	65	Foraminifera	1	<1

136-167 cm: Pebbly, muddy sand, light olive gray (5Y 5/2); median diameter of pebbles 5 mm; erratic occurrences of larger pebbles between 136-139 cm (30 mm), 140-142 cm (20 mm), 140-144 cm (32 mm), 142-146 cm (40 mm), and 150-153 cm (30 mm); many pebbles and coarse sand grains are encrusted with manganese oxides; several large pebbles were sawed in half when the sediment was split with a saw while frozen due to special sampling requirements; unit is moderately disturbed due to freezing; gradational contact. NOTE: smear slide is biased toward clay and silt.

smear slide:	154 cm		
Quartz	65	Clay	19
Feldspar	4	Volcanic glass	2
Mica	<1	Glauconite	<<1
Heavy minerals	10		

167-350 cm: Mud, light olive gray (5Y 5/2); silt content increases with depth; pebbles between 275-278 cm (30 mm) and 292-294 cm (20 mm); pebbles coated with manganese oxides, ranging from 10 mm to 20 mm, sparsely scattered between 185-262 cm; pebbles up to 5 mm sparsely scattered between 295-340 cm; highly disturbed between 219-292 cm; slightly disturbed due to freezing between 167-219 cm; gradational contact.

smear slide:	180 cm		
Quartz	42	Clay	48
Feldspar	2	Volcanic glass	1
Mica	<<1	Glauconite	<1
Heavy minerals	7	Sponge spicules	<<1

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Logged by: Eggers, Graves

ISLAS ORCADAS PC 1578-24

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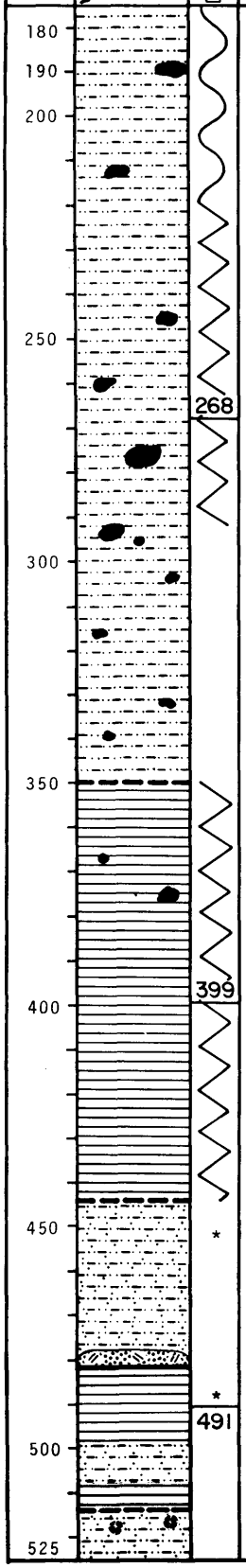

LATITUDE: 69°58.2' S CORR. DEPTH: 4078 M, 2230 FM

LONGITUDE: 12°17.0' W CORE LENGTH: 1068 CM

LITHOLOGIC DESCRIPTION

350-444 cm: Clay, light olive gray (5Y 5/2); 5 mm pebble between 367-368 cm, coated with manganese oxides; 23 mm pebble between 373-376 cm, encrusted with manganese oxides; unit is moderately disturbed due to freezing; gradational contact.

smear slide:	422 cm
Quartz	14
Feldspar	2
Mica	1
Heavy minerals	5
Clay	76
Volcanic glass	2
Glauconite	<1
Micro-Mn nodules	<1
Sponge spicules	<1

444-482 cm: Sandy mud, light olive gray (5Y 5/2); volcanic ash and micro-manganese nodules sparsely scattered throughout; 4 cm lens between 478-482 cm composed of sand and volcanic ash; sand size within the lens grades from fine to coarse; sharp contact. NOTE: smear slide is slightly biased toward clay.

smear slide:	466 cm
Quartz	48
Feldspar	2
Mica	1
Heavy minerals	8
Clay	39
Volcanic glass	1
Glauconite	1
Sponge spicules	<<1

482-514 cm: Clay, light olive gray (5Y 5/2); 9 cm layer of sandy mud between 499-508 cm, light olive gray (5Y 5/2); 1 cm lamina between 504-505 cm composed of coarse to medium sand; gradational contact.

smear slide:	510 cm
Quartz	14
Feldspar	<1
Mica	<<1
Heavy minerals	5
Clay	79
Volcanic glass	2
Diatoms	<<1
Sponge spicules	<<1

514-543 cm: Sandy mud, light olive gray (5Y 5/2); silt content increases with depth; 4 cm layer between 524-528 cm rich in silt, bottom contact of layer is sharp and inclined; 2 cm layer between 528-530 cm composed of mud, light olive gray (5Y 5/2); 10 mm sedimentary clast between 515-516 cm, composed of clay, dark yellowish orange (10YR 6/6), soft; 10 mm sedimentary clast between 518-519 cm, composed of clay, yellowish gray (5Y 7/2), compacted, fragmented due to freezing; gradational contact.

smear slide:	519 cm
Quartz	34
Feldspar	1
Mica	<1
Heavy minerals	5
Clay	55
Volcanic glass	2
Diatoms	3
Sponge spicules	<1
Silicoflagellates	<<1

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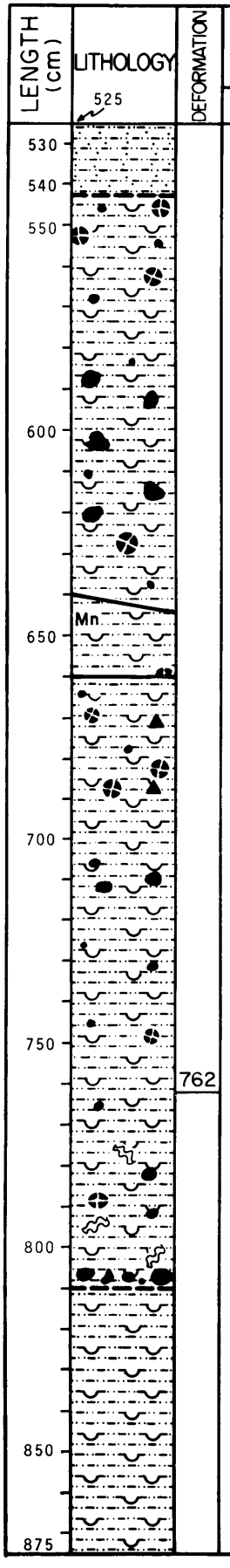
Logged by: Eggers, Graves

ISLAS ORCADAS PC 1578-24



LATITUDE: 69°58.2' S CORR. DEPTH: 4078 M, 2230 FM

LONGITUDE: 12°17.0' W CORE LENGTH: 1068 CM

LITHOLOGIC DESCRIPTION

543-640 cm: Diatomaceous mud, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered throughout; zone of higher silt content between 634-640 cm; sedimentary clasts between 552-554 cm (15 mm) and 562-563 cm (10 mm), composed of clay, dark yellowish orange (10YR 6/6), compacted, fragmented due to freezing; 10 mm sedimentary clast between 546-547 cm composed of sandy mud, dark yellowish brown (10YR 4/2), contains glauconite, compacted; 20 mm sedimentary clast between 627-629 cm, composed of clay, olive black (5Y 2/1) and dark yellowish orange (10YR 6/6), soft; 15 mm to 20 mm pebbles common between 584-625 cm; pebbles up to 10 mm sparsely scattered throughout; sharp, inclined contact between 640-644 cm.

smear slide:	564 cm
Quartz	14
Feldspar	1
Heavy minerals	2
Clay	53
Volcanic glass	<1
Micro-Mn nodules	<1
Diatoms	30
Radiolarians	<1
Silicoflagellates	<<1

640-660 cm: Diatomaceous mud, pale olive (10Y 6/2); micro-manganese nodules common between 640-649 cm, sparsely scattered between 649-660 cm; 1 cm inclined layer between 640-644 cm, composed of diatomaceous mud, pale olive (10Y 6/2), compacted, fragmented due to freezing; 18 mm sedimentary clast between 658-660 cm, composed of silt and very fine sand, dusky yellow (5Y 6/4), contains glauconite, slightly compacted; sharp contact.

smear slide:	650 cm
Quartz	35
Feldspar	3
Mica	<1
Heavy minerals	7
Clay	31
Diatoms	23
Radiolarians	1
Sponge spicules	<1
Silicoflagellates	<<1

660-810 cm: Diatomaceous mud, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered throughout; sedimentary clasts between 668-670 cm (20 mm) and 748-750 cm (15 mm) composed of mud, light olive gray (5Y 5/2), compacted; 15 mm sedimentary clast between 682-684 cm, composed of clay, olive black (5Y 2/1) and pale yellowish brown (10YR 6/2), soft; 10 mm sedimentary clast between 688-689 cm, composed of sandy mud, dark yellowish brown (10YR 4/2), compacted; 5 mm sedimentary clast between 788-789 cm, composed of mud, olive gray (5Y 4/1), compacted; obsidian between 669-672 cm (30 mm) and 685-688 cm (25 mm); 30 mm pebble between 780-783 cm; pebbles up to 20 mm abundant between 805-810 cm, common between 707-712 cm; pebbles up to 10 mm sparsely scattered throughout; slightly bioturbated between 774-808 cm; gradational contact.

smear slide:	751 cm
Quartz	12
Feldspar	1
Heavy minerals	3
Clay	64
Volcanic glass	<1
Diatoms	20
Radiolarians	<1
Sponge spicules	<1
Silicoflagellates	<<1

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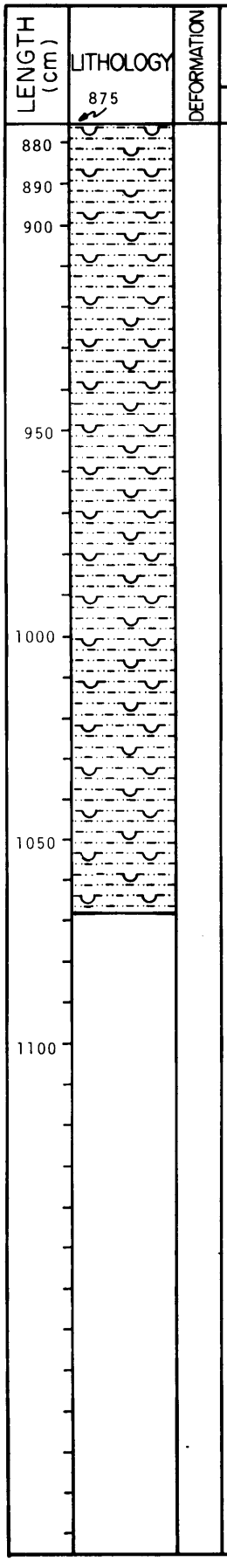
Logged by: Eggers, Graves

ISLAS ORCADAS PC 1578-24



LATITUDE: 69°58.2′ S CORR. DEPTH: 4078 M, 2230 FM

LONGITUDE: 12°17.0′ W CORE LENGTH: 1068 CM

LITHOLOGIC DESCRIPTION

810-1068 cm: Diatomaceous mud, color varies from grayish olive (10Y 4/2) to olive gray (5Y 3/2).

smear slide:	1006 cm
Quartz	16
Feldspar	2
Mica	<1
Heavy minerals	4
Clay	58
Volcanic glass	2
Glauconite	<1
Micro-Mn nodules	<1
Diatoms	17
Radiolarians	<1
Sponge spicules	1
Silicoflagellates	<<1

Bottom topography: at the level of a sharp slope on the Antarctic continental rise.

*NOTE: Sediment between 444-458 cm and 490-491 cm is bagged.

Logged by: Eggers, Graves

ISLAS ORCADAS PC 1578-25

LATITUDE: 71°01.3′ S CORR. DEPTH: 4440 M, 2428 FM

LONGITUDE: 18°16.0′ W CORE LENGTH: 1013 CM

LITHOLOGIC DESCRIPTION

0-142 cm: Mud, light olive gray (5Y 5/2); slightly stained with manganese oxides; 20 mm sedimentary clast between 57-59 cm, composed of silt, olive gray (5Y 3/2), soft; subrounded pebbles between 74-75 cm (3 mm) and 84-85 cm (9 mm); 50 mm piece of plastic liner between 11-16 cm; moderately disturbed between 114-121 cm; slightly disturbed between 0-99 cm; disturbances are due to freezing of the core; sharp contact.

smear slide:	127 cm
Quartz	31
Feldspar	1
Mica	<<1
Heavy minerals	8
Clay	60
Sponge spicules	<<1

142-358 cm: Sandy mud, light olive gray (5Y 5/2); sand content varies with depth; unit is slightly stained with manganese oxides; 5 cm layer of medium sand, poorly sorted, between 142-147 cm; sedimentary clasts between 223-224 cm (7 mm) and 293-295 cm (14 mm), composed of clay containing micro-manganese nodules, moderate brown (5YR 4/4), moderately indurated, fragmented due to freezing; angular pebbles up to 15 mm abundant between 355-358 cm; fine pebbles sparsely scattered throughout; sharp contact. NOTE: smear slides are slightly biased toward clay.

smear slides:	191 cm	305 cm
Quartz	42	40
Feldspar	2	2
Mica	<1	<<1
Heavy minerals	8	9
Clay	47	49
Volcanic glass	1	<1
Glauconite	<<1	-
Sponge spicules	-	<1

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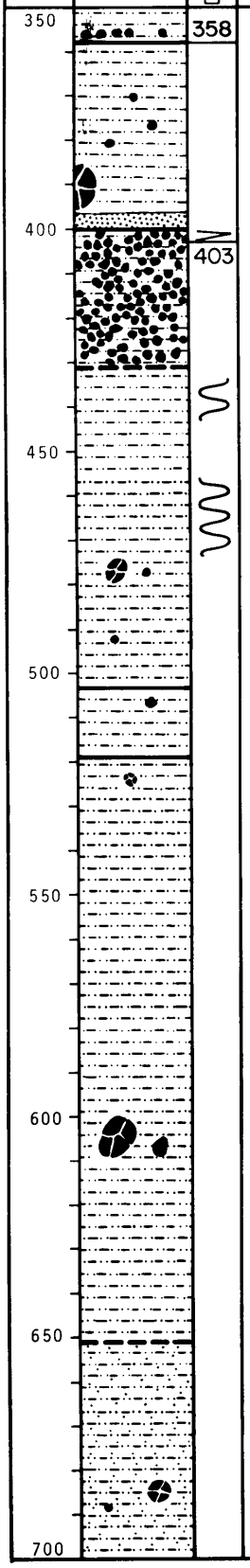
Logged by: Eggers, Bergen, Graves, Kaharoeddin

ISLAS ORCADAS PC 1578-25



LATITUDE: 71°01.3′ S
LONGITUDE: 18°16.0′ W
CORR. DEPTH: 4440 M, 2428 FM
CORE LENGTH: 1013 CM

LITHOLOGIC DESCRIPTION

358-400 cm: Mud, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered throughout; 4 cm layer of fine sand, moderately sorted, between 396-400 cm; 85 mm sedimentary clast between 386-395 cm, composed of muddy, diatomaceous ooze, pale olive (10Y 6/2), soft, with a 12 mm core between 390-392 cm, composed of silt, light olive gray (5Y 5/2); pebbles up to 5 mm sparsely scattered between 369-382 cm; sharp contact.

smear slides:	367 cm	(sedimentary clast) 390 cm
Quartz	37	14
Feldspar	2	<1
Mica	<1	-
Heavy minerals	8	2
Clay	53	8
Volcanic glass	<1	<1
Diatoms	-	76
Radiolarians	-	<1
Sponge spicules	<1	-

400-431 cm: Muddy, fine pebbles, light olive gray (5Y 5/2); pebbles are sub-angular to subrounded; sand and mud content varies with depth; moderately disturbed (washed) between 400-403 cm; gradational contact.

431-503 cm: Mud, light olive gray (5Y 5/2); zone of higher sand and silt content between 480-504 cm; 55 mm sedimentary clast between 474-480 cm, composed of mud containing diatoms (<10%), light olive gray (5Y 5/2), soft; subangular pebbles between 477-478 cm (5 mm) and 492-493 cm (8 mm); slightly disturbed between 434-443 cm and 456-474 cm; sharp contact.

smear slide:	438 cm		
Quartz	37	Clay	52
Feldspar	2	Glauconite	<<1
Heavy minerals	9	Sponge spicules	<<1

503-519 cm: Mud, dusky yellow (5Y 6/4); unit has higher diatom content than overlying and underlying units; 2 mm lamina at top of unit, composed of silt, rich in heavy minerals and micro-manganese nodules; mud, olive gray (5Y 3/2), in 4 mm stringers and patches up to 5 mm between 504-505 cm, 511-513 cm and 517-519 cm; 6 mm subangular pebble between 504-505 cm; sharp contact.

smear slide:	509 cm		
Quartz	39	Volcanic glass	<1
Feldspar	1	Glauconite	<<1
Mica	<1	Diatoms	12
Heavy minerals	3	Sponge spicules	<1
Clay	45		

519-651 cm: Mud, light olive gray (5Y 5/2); stringers up to 2 mm, composed of silt, common between 641-646 cm; 7 mm sedimentary clast between 524-525 cm, composed of muddy, diatomaceous ooze, pale olive (10Y 6/2), soft; 90 mm elongated sedimentary clast between 600-609 cm, composed of mud, olive gray (5Y 3/2), soft; 15 mm subangular pebble between 606-608 cm; gradational contact.

smear slides:	534 cm	618 cm
Quartz	47	43
Feldspar	2	2
Mica	<1	<<1
Heavy minerals	5	9
Clay	42	39
Volcanic glass	1	2
Glauconite	1	1
Diatoms	2	4
Radiolarians	-	<<1
Sponge spicules	<1	<1
Silicoflagellates	<<1	-

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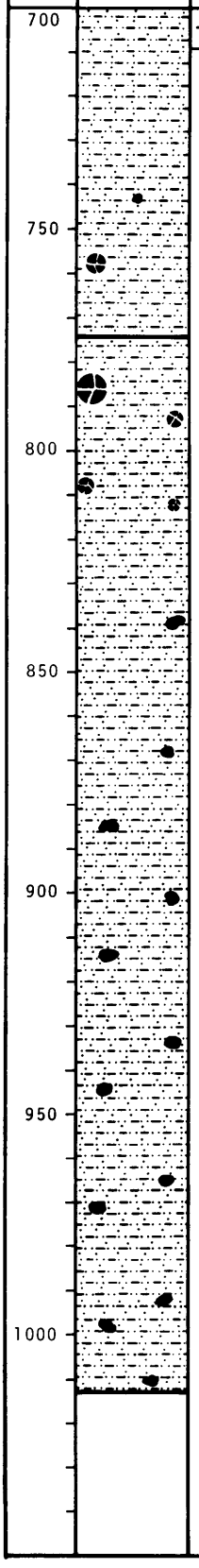


LATITUDE: 71°01.3' S CORR. DEPTH: 4440 M, 2428 FM

LONGITUDE: 18°16.0' W CORE LENGTH: 1013 CM

LITHOLOGIC DESCRIPTION

651-774 cm: Sandy mud, light olive gray (5Y 5/2); sedimentary clasts between 683-686 cm (30 mm) and 758-760 cm (20 mm), composed of mud, light olive gray (5Y 5/2), soft; angular pebbles between 688-689 cm (4 mm) and 742-743 cm (4 mm); sharp contact. NOTE: smear slide at 696 cm is slightly biased toward clay.

smear slides:	696 cm	755 cm
Quartz	40	62
Feldspar	1	2
Mica	<1	<1
Heavy minerals	4	11
Clay	48	18
Volcanic glass	1	2
Glauconite	1	3
Diatoms	4	2
Radiolarians	<1	<<1
Sponge spicules	1	1

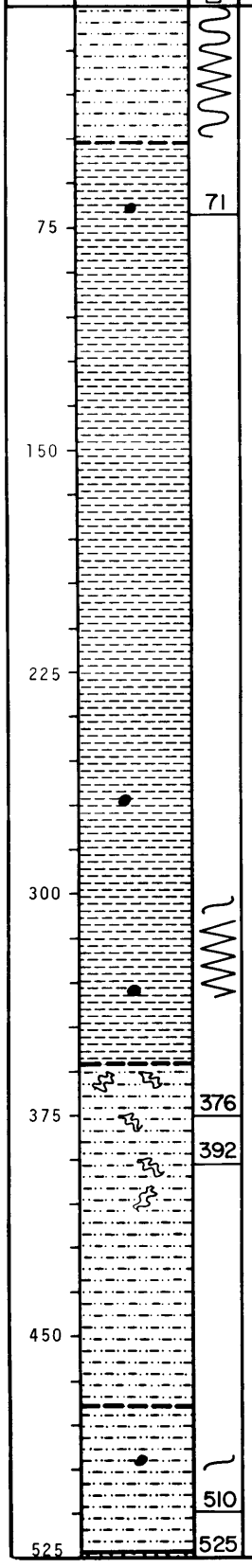
774-1013 cm: Sandy mud, olive gray (5Y 3/2); 40 mm sedimentary clast between 784-788 cm, composed of diatomaceous mud, olive gray (5Y 3/2), soft; 20 mm sedimentary clast between 792-794 cm, composed of clay, dark greenish gray (5GY 4/1), soft; 20 mm sedimentary clast between 806-808 cm, composed of mud, olive gray (5Y 4/1), soft; 10 mm sedimentary clast between 813-814 cm, composed of diatomaceous mud, moderate yellowish brown (10YR 5/4), soft; 25 mm pebble between 835-838 cm; pebbles up to 20 mm common between 865-1013.

smear slides:	(sedimentary clast) 786 cm	903 cm
Quartz	30	56
Feldspar	1	1
Mica	1	1
Heavy minerals	3	5
Clay	40	27
Volcanic glass	<1	2
Rock fragments	-	<1
Glauconite	<1	2
Diatoms	24	5
Radiolarians	<1	<1
Sponge spicules	1	1
Silicoflagellates	<<1	-

Bottom topography: flat; abyssal floor of Weddell Sea.

Logged by: Eggers, Bergen, Graves, Kaharoeddin

ISLAS ORCADAS PC 1578-26



LATITUDE: 71°54.1' S CORR. DEPTH: 2242 M, 1226 FM

LONGITUDE: 17°15.6' W CORE LENGTH: 1135 CM

LITHOLOGIC DESCRIPTION

0-47 cm: Mud, light olive gray (5Y 5/2); highly disturbed between 15-32 cm; slightly disturbed between 0-15 cm and 32-45 cm; disturbances due to freezing of the core; gradational contact.

smear slide:	6 cm
Quartz	38
Feldspar	2
Mica	1
Heavy minerals	8
Clay	41
Volcanic glass	2
Glauconite	3
Diatoms	4
Radiolarians	<1
Sponge spicules	1

47-358 cm: Silt, light olive gray (5Y 5/2), gradationally changing to olive gray (5Y 3/2) at 69 cm; size of silt varies from fine to coarse, poorly sorted, predominantly composed of quartz and heavy minerals; higher foraminiferal content between 309-337 cm; lower clay content between 320-358 cm; laminae of coarse silt common between 207-284 cm, sparsely interspersed between 73-207 cm; 29 mm subrounded pebble between 68-71 cm; 10 mm angular pebble between 269-271 cm; 15 mm subangular pebble between 331-333 cm; moderately disturbed between 309-335 cm; slightly disturbed between 304-307 cm; disturbances due to freezing of the core; gradational contact.

smear slides:	64 cm	199 cm	303 cm
Quartz	60	55	50
Feldspar	3	2	2
Mica	<1	<1	1
Heavy minerals	15	16	15
Clay	17	22	21
Volcanic glass	2	3	4
Glauconite	2	2	2
Carbonate unspecified	<1	-	1
Foraminifera	<<1	<<1	3
Diatoms	<1	<<1	<<1
Radiolarians	<<1	<<1	-
Sponge spicules	1	<1	1
Silicoflagellates	<<1	-	-

358-474 cm: Mud, light olive gray (5Y 5/2); highly bioturbated between 358-369 cm; slightly bioturbated between 369-405 cm; gradational contact.

smear slides:	371 cm	414 cm
Quartz	39	40
Feldspar	3	2
Mica	1	1
Heavy minerals	10	15
Clay	42	37
Volcanic glass	3	2
Glauconite	2	2
Diatoms	<<1	<1
Radiolarians	-	<<1
Sponge spicules	<<1	1

474-524 cm: Mud, light olive gray (5Y 5/2), gradationally changing to olive gray (5Y 3/2) at 478 cm; stringers of silt, composed primarily of quartz particles, between 502-503 cm and 508-509 cm; 10 mm subangular pebble between 492-493 cm; slightly disturbed between 490-495 cm due to freezing of the core; sharp contact.

smear slide:	492 cm		
Quartz	55	Volcanic glass	1
Feldspar	2	Glauconite	2
Mica	2	Diatoms	<1
Heavy minerals	10	Sponge spicules	<1
Clay	28		

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Logged by: Watkins, Kaharoeddin, Graves, Bergen

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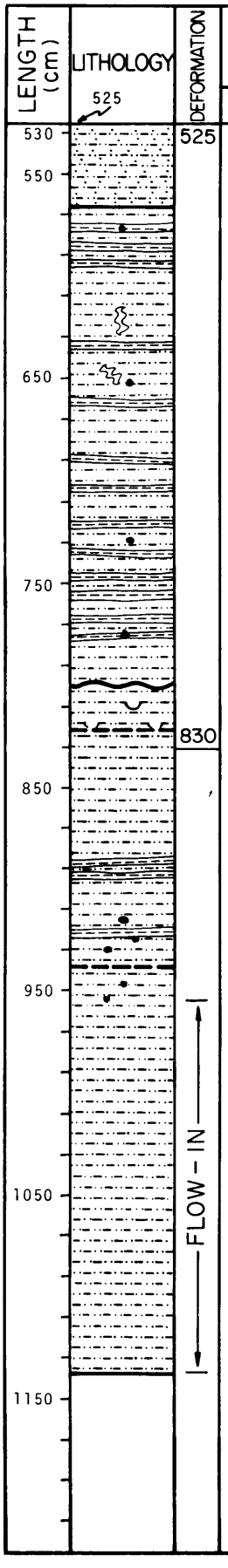


LATITUDE: 71°54.1′ S CORR. DEPTH: 2242 M, 1226 FM

LONGITUDE: 17°15.6′ W CORE LENGTH: 1135 CM

LITHOLOGIC DESCRIPTION

524-566 cm: Sandy mud, olive gray (5Y 3/2); sharp contact.

smear slide:	528 cm		
Quartz	57	Glauconite	2
Feldspar	2	Carbonate unspecified	<1
Mica	1	Foraminifera	2
Heavy minerals	14	Diatoms	<<1
Clay	20	Sponge spicules	<1
Volcanic glass	2		

566-799 cm: Mud, olive gray (5Y 3/2), gradationally changing to olive gray (5Y 4/1) between 605-650 cm, gradationally changing to grayish olive (10Y 4/2) between 776-799 cm; highly laminated with laminae of coarse, silt-size quartz particles between 573-595 cm and between 745-775 cm; moderately laminated with laminae of medium, silt-size quartz particles between 686-745 cm; slightly laminated with laminae of medium, silt-size quartz particles between 624-686 cm; 1 cm lamina of clay, light olive gray (5Y 5/2), between 798-799 cm; subangular pebbles between 576-578 cm (14 mm), 652-653 cm (7 mm), 731-733 cm (19 mm) and 774-776 cm (12 mm); slightly bioturbated between 621-649 cm; sharp, wavy contact.

smear slides:	570 cm	771 cm (lamina)		570 cm	771 cm (lamina)
Quartz	45	50	Glauconite	1	4
Feldspar	2	4	Carbonate unspecified	<<1	<<1
Mica	1	1	Foraminifera	<<1	<<1
Heavy minerals	11	25	Diatoms	-	<<1
Clay	37	12	Sponge spicules	-	1
Volcanic glass	3	3			

799-821 cm: Diatomaceous mud, olive gray (5Y 4/1); zone of higher silt content between 799-803 cm; gradational contact.

smear slide:	812 cm		
Quartz	40	Glauconite	2
Feldspar	1	Diatoms	15
Mica	<1	Radiolarians	<1
Heavy minerals	11	Sponge spicules	1
Clay	26	Silicoflagellates	<<1
Volcanic glass	4		

821-938 cm: Mud, olive gray (5Y 3/2); moderately laminated with laminae of medium, silt-size quartz particles between 885-890 cm; slightly laminated between 918-919 cm; stringers of silt between 924-930 cm; subangular pebbles between 914-916 cm (10 mm) and 922-923 cm (5 mm); 18 mm subrounded pebble between 931-933 cm: gradational contact.

smear slide:	858 cm		
Quartz	45	Volcanic glass	3
Feldspar	2	Glauconite	1
Mica	<1	Diatoms	<1
Heavy minerals	15	Radiolarians	<<1
Clay	33	Sponge spicules	1

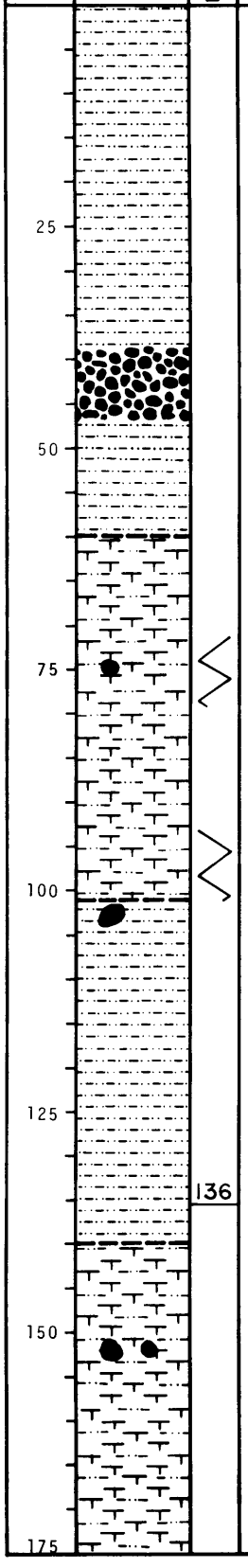
938-1135 cm: Mud, grayish olive (10Y 4/2); higher silt content than in overlying unit; 10 mm subrounded pebble between 945-946 cm; 5 mm subangular pebble between 953-954 cm; gradationally changing to flow-in at 955 cm.

smear slide:	954 cm		
Quartz	48	Volcanic glass	1
Feldspar	2	Glauconite	1
Mica	<1	Diatoms	<<1
Heavy minerals	11	Sponge spicules	1
Clay	36		

Bottom topography: gently sloping; on the Antarctic continental slope.

Logged by: Watkins, Kaharoeddin, Graves, Bergen

ISLAS ORCADAS PC 1578-27



LATITUDE: 72°24.5′ S **WATER DEPTH:** 3274 M, 1790 FM

LONGITUDE: 19°25.1′ W **CORE LENGTH:** 929 CM

LITHOLOGIC DESCRIPTION

0-60 cm: Mud, olive gray (5Y 3/2); layer of weathered and fractured igneous rock fragments, dark yellowish green (10GY 4/4) to grayish green (5G 5/2), between 39-47 cm; unit is slightly watery throughout; slightly washed along the side between 51-60 cm; gradational contact.

smear slide:	14 cm		
Quartz	61	Glauconite	1
Feldspar	2	Micro-Mn nodules	1
Mica	<1	Carbonate unspecified	1
Heavy minerals	10	Foraminifera	1
Clay	18	Diatoms	<1
Volcanic glass	4	Sponge spicules	1

60-101 cm: Marly, foraminiferal ooze, light olive gray (5Y 5/2); 19 mm subrounded basaltic pebble at 74-76 cm; moderately washed along the side between 60-71 cm and 79-93 cm; highly disturbed (washed) between 71-79 cm and 93-101 cm; gradational contact.

smear slide:	70 cm		
Quartz	29	Glauconite	1
Feldspar	2	Micro-Mn nodules	<1
Mica	1	Carbonate unspecified	<1
Heavy minerals	8	Foraminifera	32
Clay	23	Diatoms	<1
Volcanic glass	3	Sponge spicules	1

101-140 cm: Mud, light olive gray (5Y 5/2); 28 mm manganese oxide-coated pebble between 101-104 cm, subangular; moderately washed between 101-104 cm; slightly washed along the side between 104-118 cm; gradational contact.

smear slide:	112 cm		
Quartz	30	Glauconite	<1
Feldspar	2	Micro-Mn nodules	<<1
Mica	1	Diatoms	<<1
Heavy minerals	7	Sponge spicules	<1
Clay	59	Ebridians	<<1
Volcanic glass	1		

140-184 cm: Marly, foraminiferal ooze, light olive gray (5Y 5/2); zone of increased clay content between 172-180 cm; 15 mm granitic pebble between 151-153 cm, subrounded; 8 mm manganese oxide-coated pebble at 151-152 cm, subrounded; 27 mm basalt pebble at 181-184 cm; 8 mm manganese oxide-coated pebble between 182-183 cm, subrounded; slightly washed along the side between 140-159 cm; gradational contact.

smear slide:	155 cm
Quartz	12
Feldspar	2
Mica	1
Heavy minerals	8
Clay	36
Volcanic glass	2
Glauconite	<1
Carbonate unspecified	7
Foraminifera	32
Diatoms	<<1
Sponge spicules	<<1

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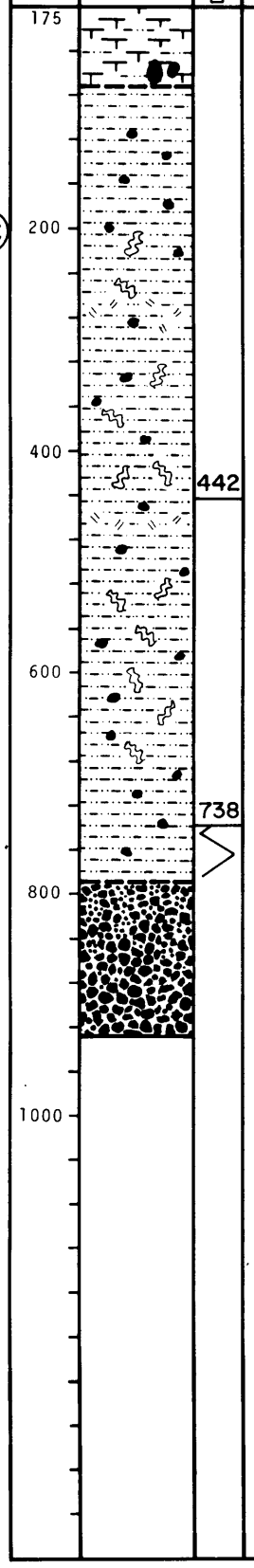
Logged by: Watkins, Goldstein, Graves, Kaharoeddin, Redmond

ISLAS ORCADAS PC 1578-27



LATITUDE: 72°24.5′ S WATER DEPTH: 3274 M, 1790 FM

LONGITUDE: 19°25.1′ W CORE LENGTH: 929 CM

LITHOLOGIC DESCRIPTION

184-789 cm: Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered between 185-264 cm, 291-324 cm, 336-370 cm, 380-460 cm, and 480-520 cm; volcanic ash common between 264-291 cm and 460-472 cm; zone of foram-rich mud between 525-536 cm; pebbles up to 30 mm sparsely scattered throughout; slightly bioturbated between 210-227 cm, 251-263 cm, 324-419 cm, 430-525 cm, 536-650 cm, and 677-700 cm; moderately bioturbated between 419-430 cm; highly disturbed (watery) between 746-789 cm; approximately 8 cm of sediment lost during coring procedure between 738-746 cm; gradational contact.

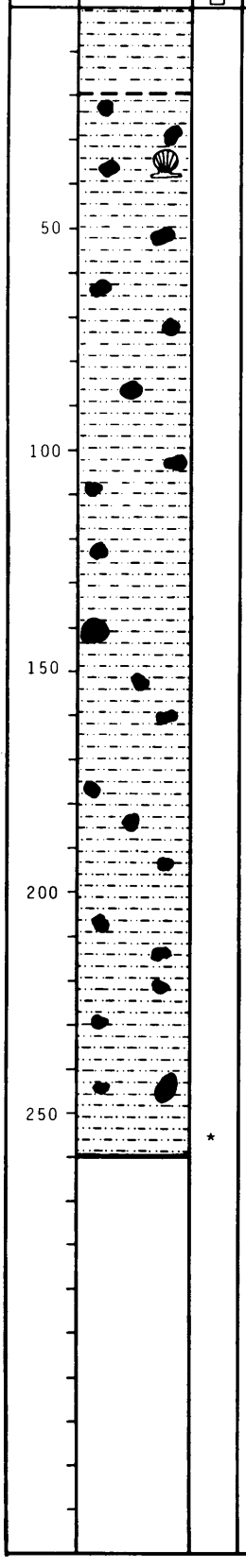
smear slides:	281 cm	429 cm	582 cm	682 cm	760 cm
Quartz	35	40	55	40	30
Feldspar	2	<1	2	1	2
Mica	1	<1	1	<1	<1
Heavy minerals	7	5	15	9	7
Clay	53	53	25	49	57
Volcanic glass	1	2	2	1	2
Glauconite	1	<1	<1	-	<1
Micro-Mn nodules	<1	-	-	<1	2
Carbonate unspecified	<1	<1	-	-	-
Foraminifera	-	<<1	-	-	<<1
Diatoms	<<1	-	-	-	-
Sponge spicules	<1	<1	-	-	<<1

789-929 cm: Pebbles, olive gray (5Y 3/2); clay content decreases with depth between 789-826 cm; size increases with depth from very fine pebbles (20 mm) to very coarse pebbles (64 mm).

Bottom topography: sharply sloping area of Antarctic continental slope.

Logged by: Watkins, Goldstein, Graves, Kaharoeddin, Redmond

ISLAS ORCADAS PC 1578-28



LATITUDE: 72°11.4′ S
LONGITUDE: 15°18.3′ W
CORR. DEPTH: 530 M, 290 FM
CORE LENGTH: 260 CM

LITHOLOGIC DESCRIPTION

0-20 cm: Mud, olive gray (5Y 3/2); gradational contact.

smear slide:	8 cm
Quartz	22
Feldspar	3
Mica	1
Heavy minerals	8
Clay	62
Volcanic glass	3
Glauconite	<1
Diatoms	<1
Sponge spicules	1

20-260 cm: Pebbly mud, olive black (5Y 2/1); median diameter of pebbles 36 mm; larger erratic pebbles, subangular to subrounded, between 138-142 cm (44 mm) and 242-247 cm (50 mm); pelecypod valve, 25 mm wide, between 35-36 cm, fragmented during splitting of the core. NOTE: smear slides are biased towards clay.

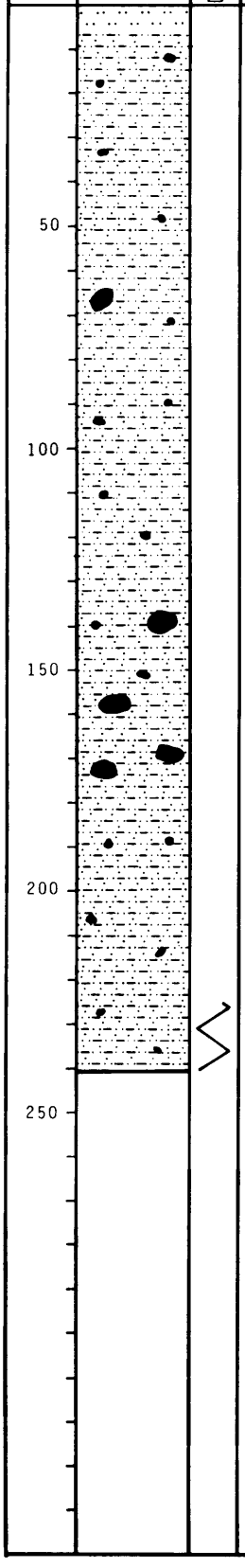
smear slides:	74 cm	185 cm
Quartz	19	19
Feldspar	2	1
Heavy minerals	6	8
Clay	60	61
Volcanic glass	3	3
Glauconite	5	1
Carbonate unspecified	5	7

Bottom topography: cored on the Antarctic continental slope.

*NOTE: Sediment between 251-260 cm is bagged.

Logged by: Graves, Eggers

ISLAS ORCADAS PC 1578-29



LATITUDE: 72°09.1′ S CORR. DEPTH: 380 M, 208 FM

LONGITUDE: 15°31.8′ W CORE LENGTH: 241 CM

LITHOLOGIC DESCRIPTION

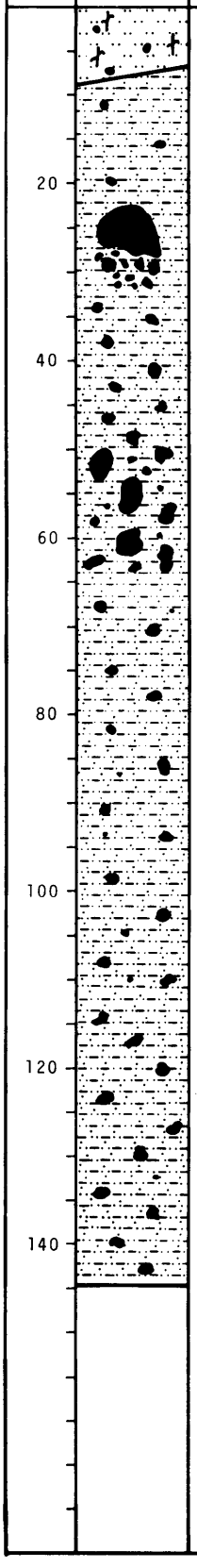
0-241 cm: Sandy mud, olive black (5Y 2/1); sand fraction composed of very fine to very coarse quartz sand; 5 cm layer between 0-5 cm composed of muddy sand, olive gray (5Y 4/1); 35 mm subangular pebble between 63-67 cm; rounded pebbles between 136-141 cm (41 mm), 155-158 cm (28 mm), 165-168 cm (28 mm), and 170-173 cm (28 mm); pebbles up to 20 mm common throughout; moderately disturbed between 227-241 cm; slightly washed along the side between 214-227 cm; NOTE: smear slides are biased toward clay.

smear slides:	3 cm	30 cm	109 cm
Quartz	57	63	55
Feldspar	2	1	1
Mica	<1	1	1
Heavy minerals	8	14	10
Clay	25	21	33
Volcanic glass	<1	<1	<1
Glauconite	2	<1	<1
Diatoms	3	<<1	<<1
Radiolarians	<1	-	-
Sponge spicules	3	<1	<1
Silicoflagellates	<<1	-	-

Bottom topography: cored on the Antarctic continental shelf, approximately three miles from the Antarctic Ice Shelf.

Logged by: Bergen, Watkins, Graves

ISLAS ORCADAS PC 1578-30



LATITUDE: 71°58.9′ S CORR. DEPTH: 530 M, 290 FM

LONGITUDE: 16°12.6′ W CORE LENGTH: 145 CM

LITHOLOGIC DESCRIPTION

0-9 cm: Muddy sand, olive gray (5Y 3/2); bryozoa common throughout; pebbles up to 6 mm sparsely scattered throughout; slightly washed along the side; sharp, inclined contact.

smear slide:	7 cm
Quartz	49
Feldspar	1
Mica	<1
Heavy minerals	15
Clay	15
Volcanic glass	3
Rock fragments	3
Glauconite	4
Carbonate unspecified	<<1
Foraminifera	1
Diatoms	3
Radiolarians	<<1
Sponge spicules	6
Silicoflagellates	<<1
Ebridians	<<1

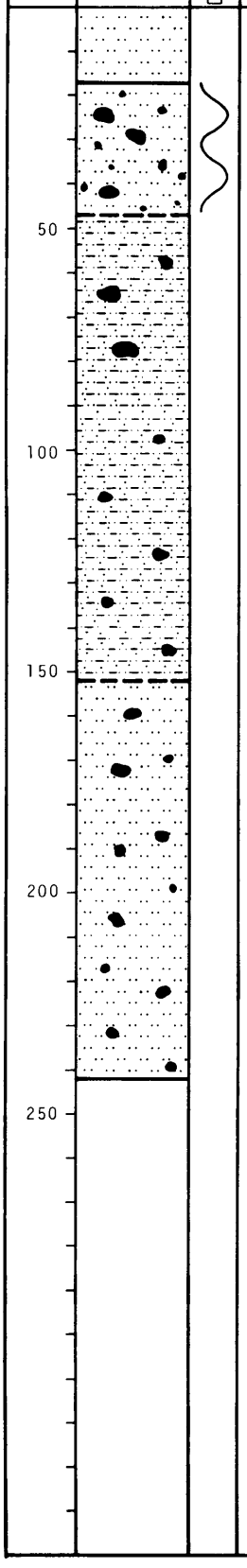
9-145 cm: Sandy mud, olive black (5Y 2/1); sand and silt content varies with depth; 50 mm rounded pebble, broken on one side, probably volcanic breccia, between 23-28 cm; broken pieces of this pebble, up to 14 mm, between 28-32 cm; pebbles up to 36 mm abundant between 48-64 cm; pebbles up to 16 mm common between 32-48 cm and 64-145 cm; pebbles up to 9 mm sparsely scattered between 9-23 cm; slightly washed along the side between 9-20 cm.

smear slides:	12 cm	33 cm	80 cm	130 cm
Quartz	45	40	40	51
Feldspar	2	1	2	1
Mica	<1	<1	<1	<1
Heavy minerals	8	8	7	25
Clay	39	50	48	15
Volcanic glass	1	1	2	1
Rock fragments	1	-	-	5
Glauconite	1	-	<1	<1
Micro-Mn nodules	<<1	<1	1	<1
Carbonate unspecified	<1	-	<<1	-
Foraminifera	-	-	<1	-
Diatoms	2	<<1	<1	1
Sponge spicules	1	<1	-	1
Silicoflagellates	-	-	-	<<1

Bottom topography: station taken just at the edge of the continental shelf break (continental slope).

Logged by: Kaharoeddin, Goldstein, Watkins, Redmond

ISLAS ORCADAS PC 1578-31



LATITUDE: 71°58.6' S CORR. DEPTH: 810 M, 443 FM

LONGITUDE: 16°18.6' W CORE LENGTH: 242 CM

LITHOLOGIC DESCRIPTION

0-17 cm: Muddy sand, olive gray (5Y 4/1); slightly washed along the side between 10-17 cm; sharp contact. NOTE: smear slide is biased toward clay.

smear slide:	14 cm
Quartz	44
Feldspar	1
Mica	<1
Heavy minerals	9
Clay	46
Volcanic glass	<1
Glauconite	<1
Carbonate unspecified	<1
Diatoms	<<1
Sponge spicules	<<1

17-47 cm: Pebbly, muddy sand, olive gray (5Y 3/2); zone with higher content of coarse quartz sand between 19-22 cm; 22 mm subangular pebble between 23-26 cm; 26 mm subrounded pebble between 27-31 cm; 37 mm subangular pebble between 40-44 cm; moderately disturbed (washed) throughout; gradational contact.

47-152 cm: Sandy mud, olive gray (5Y 3/2); pebbles up to 20 mm sparsely scattered throughout; 27 mm subrounded pebble between 63-66 cm; 24 mm subrounded pebble between 74-77 cm; gradational contact. NOTE: smear slides are biased toward clay.

smear slides:	79 cm	149 cm
Quartz	43	53
Feldspar	1	1
Mica	<1	<<1
Heavy minerals	10	8
Clay	46	35
Volcanic glass	<1	3
Glauconite	<1	<1
Sponge spicules	-	<<1

152-242 cm: Muddy sand, olive gray (5Y 3/2); pebbles up to 20 mm common throughout. NOTE: smear slide is biased toward clay.

smear slide:	205 cm
Quartz	49
Feldspar	1
Mica	<1
Heavy minerals	11
Clay	39
Volcanic glass	<1
Glauconite	<<1
Diatoms	<<1

Bottom topography: cored on the Antarctic continental slope.

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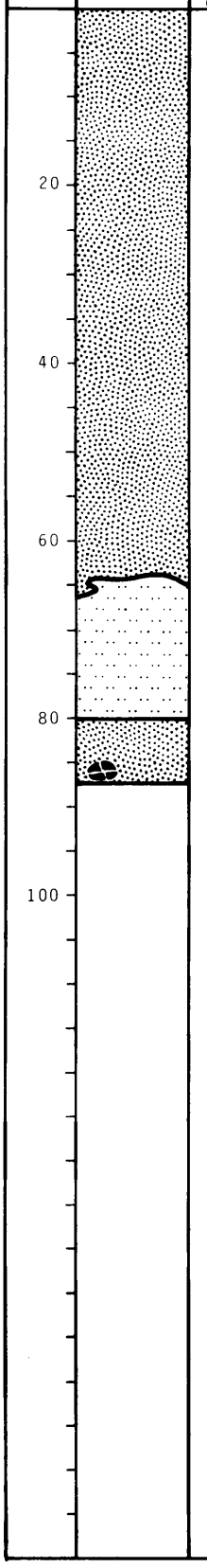
ISLAS ORCADAS PC 1578-32



LATITUDE: 71°58.1′ S CORR. DEPTH: 1061 M, 580 FM

LONGITUDE: 16°29.6′ W CORE LENGTH: 87 CM

LITHOLOGIC DESCRIPTION

0-65 cm: Sand, olive gray (5Y 3/2); sorting and grain size vary, as follows: well-sorted, fine sand between 0-15 cm, gradationally changing to moderately-sorted, medium sand between 15-43 cm, gradationally changing to well-sorted, fine sand between 43-61 cm, gradationally changing to poorly-sorted, medium sand between 61-65 cm; slightly washed along the side of the liner between 0-21 cm; sharp, irregular contact.

smear slide:	7 cm
Quartz	81
Feldspar	2
Mica	<1
Heavy minerals	16
Clay	<1
Volcanic glass	<<1
Glauconite	1
Diatoms	<<1
Sponge spicules	<1

65-80 cm: Muddy sand, olive gray (5Y 3/2); moderately washed along the side of the liner; sharp contact. NOTE: smear slide is biased toward silt and clay.

smear slide:	73 cm
Quartz	60
Feldspar	2
Mica	<1
Heavy minerals	6
Clay	20
Volcanic glass	1
Glauconite	2
Diatoms	8
Radiolarians	<1
Sponge spicules	1
Silicoflagellates	<<1

80-87 cm: Coarse sand, olive gray (5Y 3/2); moderately-sorted; 28 mm sedimentary clast of muddy sand (olive gray 5Y 3/2), soft, between 84-87 cm.

smear slide:	86 cm
Quartz	74
Feldspar	3
Mica	<1
Heavy minerals	21
Clay	<1
Volcanic glass	1
Glauconite	1

Bottom topography: cored on the Antarctic continental slope.

Logged by: Bergen, Watkins, Graves

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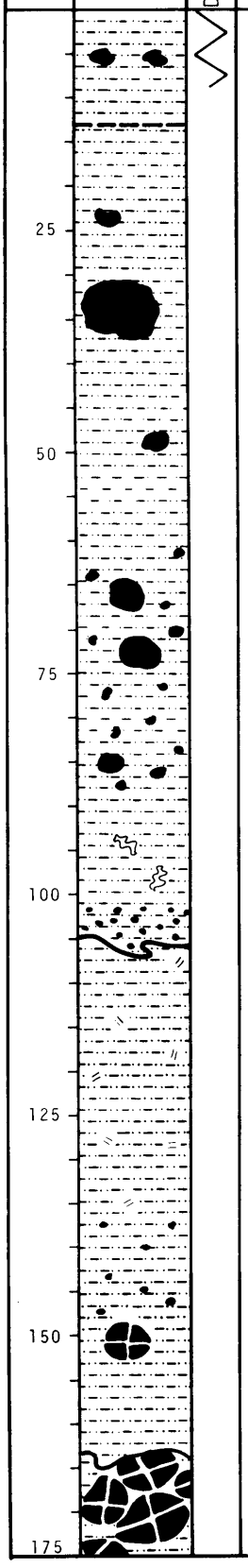

LATITUDE: 71°55.6' S CORR. DEPTH: 1536 M, 840 FM

LONGITUDE: 16°43.1' W CORE LENGTH: 521 CM

LITHOLOGIC DESCRIPTION

0-13 cm: Mud, light olive gray (5Y 5/2); 21 mm subrounded pebble between 4-7 cm; 16 mm angular pebble between 4-6 cm; moderately disturbed between 0-9 cm; gradational contact.

smear slide:	11 cm
Quartz	42
Feldspar	1
Mica	<1
Heavy minerals	8
Clay	47
Volcanic glass	1
Glauconite	<1
Foraminifera	<<1
Diatoms	1
Sponge spicules	<1

13-104 cm: Mud, light olive gray (5Y 5/2); zones containing foraminifera between 45-65 cm, 79-88 cm, and 98-104 cm; stringer with higher volcanic ash content between 21-23 cm; layer of pebbly mud between 101-104 cm; 12 mm angular pebble between 23-25 cm; 51 mm subangular pebble between 31-37 cm; 17 mm subrounded pebble between 48-50 cm; 31 mm rounded pebble between 64-68 cm; 32 mm subrounded pebble between 70-74 cm; 22 mm rounded pebble between 84-87 cm; pebbles up to 20 mm common between 61-88 cm; slightly bioturbated between 93-98 cm; sharp, irregular contact.

smear slides:	(zone) 54 cm	(zone) 85 cm	95 cm	(zone) 102 cm
Quartz	43	43	25	41
Feldspar	1	2	1	1
Mica	<1	1	2	<1
Heavy minerals	6	8	13	11
Clay	40	37	56	32
Volcanic glass	1	1	3	1
Rock fragments	-	-	-	1
Glauconite	1	1	<1	1
Carbonate unspecified	3	4	-	4
Foraminifera	4	2	-	8
Diatoms	1	1	-	<1
Radiolarians	<<1	-	-	-
Sponge spicules	<1	<1	<<1	<1

104-163 cm: Mud, light olive gray (5Y 5/2); volcanic ash common between 104-136 cm; 41 mm sedimentary clast between 148-152 cm, composed of mud, light olive gray (5Y 5/2), hard; pebbles up to 4 mm common between 135-148 cm; sharp, irregular contact.

smear slides:	113 cm	158 cm
Quartz	43	36
Feldspar	2	3
Mica	<1	<1
Heavy minerals	10	12
Clay	44	36
Volcanic glass	1	3
Glauconite	<1	2
Carbonate unspecified	<<1	2
Foraminifera	-	4
Diatoms	<<1	1
Sponge spicules	<<1	1

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Logged by: Watkins, Bergen, Graves, Eggers

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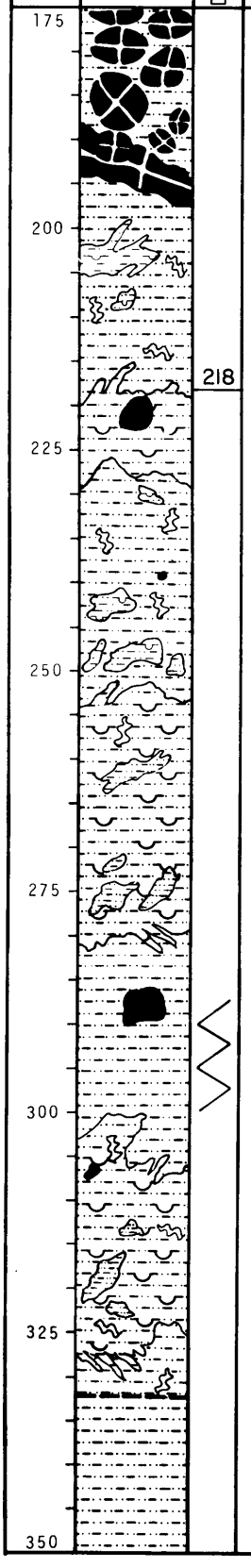

LATITUDE: 71°55.6′ S CORR. DEPTH: 1536 M, 840 FM

LONGITUDE: 16°43.1′ W CORE LENGTH: 521 CM

LITHOLOGIC DESCRIPTION

163-193 cm: Mixture of sedimentary clasts of various lithologies, as follows: clasts of clay, light olive gray (5Y 5/2), hard, up to 50 mm; clasts of bioturbated mud, light olive gray (5Y 5/2) to olive gray (5Y 3/2), hard, up to 75 mm; clasts of diatomaceous mud, light olive gray (5Y 5/2), hard, up to 20 mm, and clasts of diatomaceous ooze, pale olive (10Y 6/2), up to 35 mm; matrix composed of mud, light olive gray (5Y 5/2); sharp, irregular, dipping contact.

smear slides:	(clast) 166 cm	(clast) 172 cm	(matrix) 175 cm	(clast) 177 cm	(clast) 179 cm
Quartz	12	44	30	13	38
Feldspar	3	2	1	2	1
Mica	<1	<1	<1	<1	2
Heavy minerals	8	4	8	3	12
Clay	75	13	55	7	47
Volcanic glass	2	<1	4	1	<1
Glauconite	<1	<1	-	-	<1
Micro-Mn nodules	-	<<1	-	-	-
Diatoms	<1	37	2	73	<1
Radiolarians	-	<1	-	<1	-
Sponge spicules	<<1	<1	<<1	1	<<1
Silicoflagellates	-	<<1	-	-	-

193-332 cm: Diatomaceous mud, olive gray (5Y 4/1), and mud, olive black (5Y 2/1; these intermixed lithologies occur as discrete blocks, irregular in shape; occasionally, each lithology contains sedimentary clasts of the other lithology; 40 mm subrounded pebble between 219-223 cm; 10 mm subrounded pebble between 238-239 cm; 34 mm subrounded pebble between 286-290 cm; 15 mm angular pebble between 306-308 cm; slightly bioturbated between 201-220 cm, 228-260 cm, and 300-332 cm; moderately disturbed between 287-299 cm; gradational contact.

smear slides:	197 cm	211 cm	274 cm	318 cm
Quartz	37	37	37	33
Feldspar	1	1	1	<1
Mica	<<1	<1	<1	1
Heavy minerals	3	5	5	7
Clay	19	43	43	31
Volcanic glass	<1	2	1	1
Glauconite	<1	<1	<1	-
Micro-Mn nodules	-	-	2	1
Diatoms	40	12	11	26
Radiolarians	<<1	-	-	<<1
Sponge spicules	<1	-	<<1	<<1
Silicoflagellates	<<1	-	-	<<1

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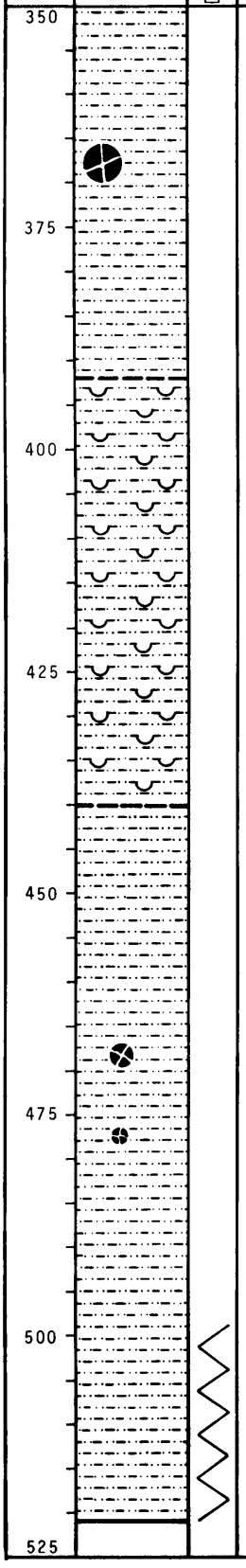


LATITUDE: 71°55.6' S CORR. DEPTH: 1536 M, 840 FM

LONGITUDE: 16°43.1' W CORE LENGTH: 521 CM

LITHOLOGIC DESCRIPTION

332-392 cm: Mud, olive black (5Y 2/1); sedimentary clast between 366-369 cm, composed of diatomaceous ooze, yellowish gray (5Y 7/2), hard; gradational contact.

smear slide:	379 cm
Quartz	32
Feldspar	<1
Mica	<1
Heavy minerals	10
Clay	53
Volcanic glass	1
Glauconite	<1
Diatoms	4
Sponge spicules	<1
Silicoflagellates	<<1

392-440 cm: Diatomaceous mud, olive black (5Y 2/1); gradational contact.

smear slide:	425 cm
Quartz	33
Feldspar	1
Mica	<1
Heavy minerals	11
Clay	29
Volcanic glass	<1
Glauconite	<<1
Diatoms	26
Radiolarians	<<1
Sponge spicules	<<1
Silicoflagellates	<1

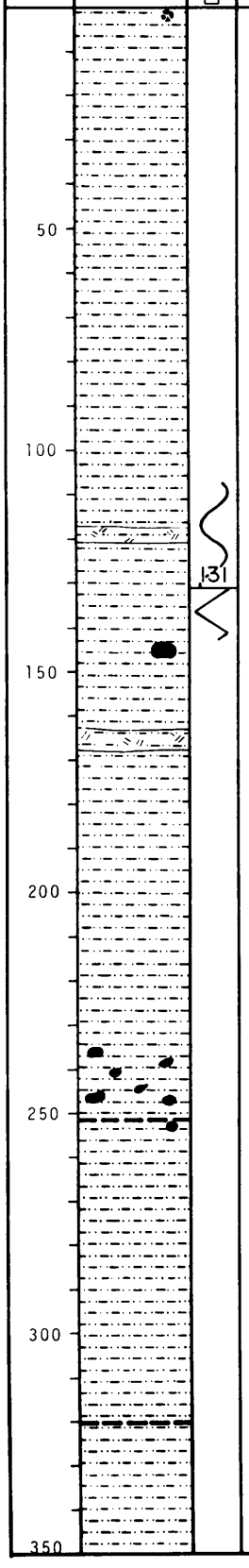
440-521 cm: Mud, olive black (5Y 2/1); zone of higher diatom content between 473-478 cm; 20 mm sedimentary clast between 468-470 cm, composed of clay, grayish olive (10Y 4/2), hard; 5 mm sedimentary clast between 477-478 cm, composed of clay, grayish olive (10Y 4/2), hard; highly disturbed between 499-521 cm.

smear slide:	481 cm
Quartz	48
Feldspar	2
Mica	<1
Heavy minerals	15
Clay	30
Volcanic glass	3
Glauconite	2
Diatoms	<<1
Sponge spicules	<<1

Bottom topography: cored on the Antarctic continental slope.

Logged by: Watkins, Bergen, Graves, Eggers

ISLAS ORCADAS PC 1578-34



LATITUDE: 71°54.0′ S CORR. DEPTH: 1865 M, 1020 FM

LONGITUDE: 16°55.9′ W CORE LENGTH: 1045 CM

LITHOLOGIC DESCRIPTION

0-251 cm: Mud, light olive gray (5Y 5/2), gradationally changing at 72 cm to olive gray (5Y 3/2), gradationally changing at 212 cm to olive gray (5Y 4/1); zone of higher diatom content between 2-5 cm; zone of higher foraminifera content between 203-241 cm; layer of ash-bearing mud between 117-121 cm and 163-168 cm; 18 mm sedimentary clast between 0-2 cm, composed predominantly of very fine sand, slightly compacted; 17 mm angular pebble between 144-147 cm; pebbles (10 mm to 24 mm) abundant between 237-250 cm; moderately disturbed (washed) between 131-142 cm; slightly disturbed (washed) between 108-131 cm; gradational contact.

smear slides:	6 cm	53 cm	94 cm	(zone) 208 cm
Quartz	28	40	42	37
Feldspar	1	1	2	1
Mica	<1	1	1	<1
Heavy minerals	7	14	13	13
Clay	57	37	39	41
Volcanic glass	<1	4	2	2
Glauconite	1	2	1	1
Carbonate unspecified	-	-	-	<1
Foraminifera	-	1	<<1	5
Diatoms	5	<1	<<1	<<1
Radiolarians	<1	-	-	-
Sponge spicules	1	<1	<1	<1

251-320 cm: Mud, light olive gray (5Y 5/2); lower carbonate content than overlying and underlying units; zone between 310-320 cm consists of finely laminated mud, light olive gray (5Y 5/2), and mud, olive gray (5Y 4/1), with higher silt content; 0.2 cm lamina of silt between 283-284 cm; laminae up to 0.2 cm, high in silt content, sparsely scattered between 296-310 cm; 17 mm subrounded pebble between 252-255 cm; gradational contact.

smear slide:	275 cm
Quartz	38
Feldspar	1
Mica	1
Heavy minerals	15
Clay	40
Volcanic glass	3
Glauconite	2
Diatoms	<<1
Sponge spicules	<1

320-400 cm: Mud, olive gray (5Y 4/1); higher foraminiferal content than overlying unit, with foraminiferal content decreasing with depth; stringers of silt up to 0.2 cm sparsely scattered throughout; gradational contact.

smear slides:	334 cm	396 cm
Quartz	44	37
Feldspar	2	2
Mica	<1	1
Heavy minerals	10	12
Clay	36	43
Volcanic glass	1	2
Glauconite	3	1
Micro-Mn nodules	-	<<1
Carbonate unspecified	-	<<1
Foraminifera	4	2
Diatoms	<1	<1
Sponge spicules	<1	<1

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Logged by: Eggers, Bergen, Graves, Watkins

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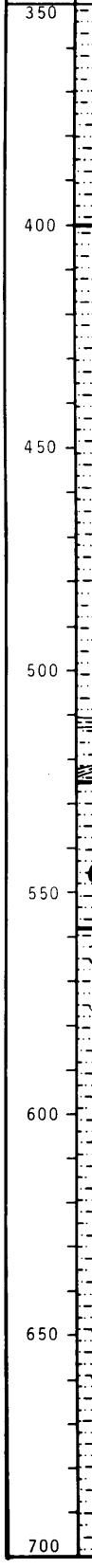

LATITUDE: 71°54.0' S
LONGITUDE: 16°55.9' W
CORR. DEPTH: 1865 M, 1020 FM
CORE LENGTH: 1045 CM

LITHOLOGIC DESCRIPTION

400-525 cm: Mud, olive gray (5Y 4/1); zone between 522-525 cm composed of finely laminated mud, olive gray (5Y 4/1), and silt; laminae convex upward; laminae up to 0.3 cm, composed of silt, common between 511-513 cm; laminae up to 0.2 cm, composed of silt, sparsely scattered between 400-511 cm and 513-522 cm; sharp contact.

smear slides:	456 cm	523 cm
Quartz	35	42
Feldspar	1	2
Mica	<1	1
Heavy minerals	12	12
Clay	49	39
Volcanic glass	1	2
Glauconite	1	2
Micro-Mn nodules	1	<1
Carbonate unspecified	-	<<1
Foraminifera	-	<<1
Sponge spicules	<1	<1

525-558 cm: Mud, grayish olive (10Y 4/2); higher content of foraminifera and sand than overlying and underlying units; pebbles between 536-540 cm (35 mm) and 543-547 cm (37 mm); mud, olive gray (5Y 4/1), dragged in along the side between 528-537 cm; sharp contact.

smear slide:	537 cm
Quartz	53
Feldspar	2
Mica	<1
Heavy minerals	7
Clay	37
Glauconite	1
Sponge spicules	<1

558-727 cm: Diatomaceous mud, grayish olive (10Y 4/2); clay content decreases with depth; silt content increases with depth below 690 cm; 7 cm layer between 560-567 cm composed of diatomaceous mud, grayish olive (10Y 4/2), highly compacted; 10 mm sedimentary clast between 591-592 cm, composed of diatomaceous mud, grayish olive (10Y 4/2), soft, with a 3 mm core of banded iron fragment, moderate reddish brown (10R 4/6) to light brown (5YR 5/6); 12 mm sedimentary clast between 589-591 cm, composed of mud, olive gray (5Y 4/1), containing volcanic ash, partially lithified; 10 mm pebble between 690-691 cm; pebbles up to 4 mm common between 717-722 cm; sharp, curving contact between 717-727 cm, looks like a load cast.

smear slides:	(layer) 565 cm	604 cm	666 cm
Quartz	30	36	45
Feldspar	1	1	1
Mica	<<1	<1	<1
Heavy minerals	3	7	10
Clay	47	34	25
Volcanic glass	1	<1	2
Glauconite	-	<1	<1
Micro-Mn nodules	-	-	<1
Diatoms	18	18	17
Radiolarians	<<1	<<1	<1
Sponge spicules	<1	<<1	<1
Silicoflagellates	<<1	<<1	<<1

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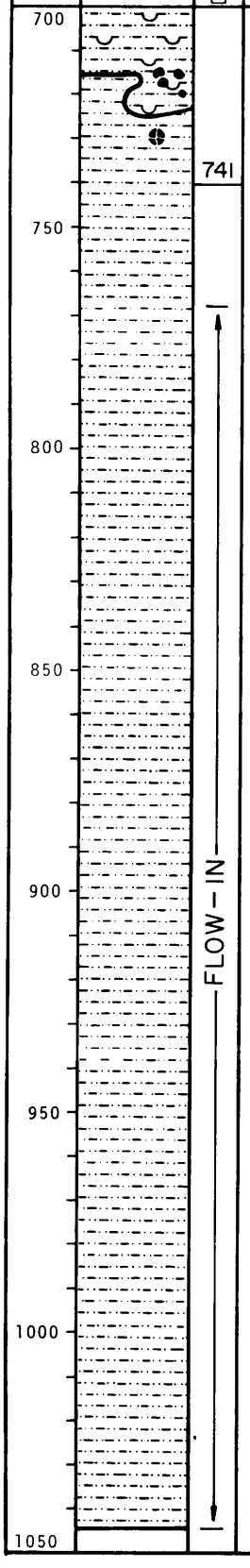


LATITUDE: 71°54.0′ S CORR. DEPTH: 1865 M, 1020 FM

LONGITUDE: 16°55.9′ W CORE LENGTH: 1045 CM

LITHOLOGIC DESCRIPTION

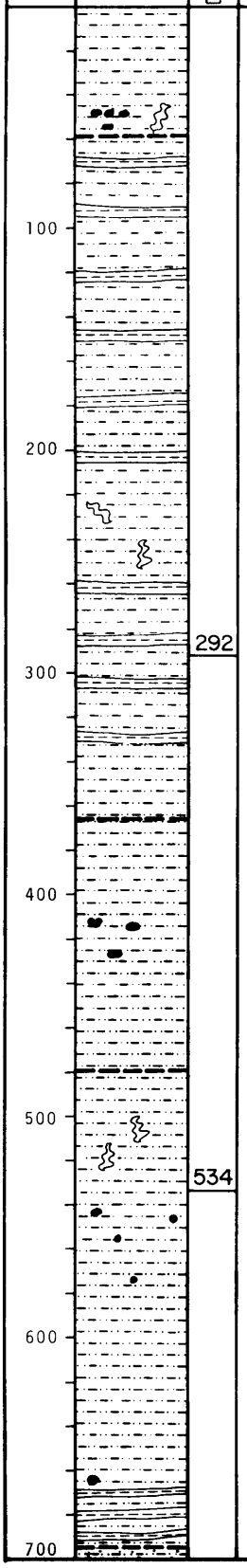
727-1045 cm: Mud, olive gray (5Y 3/2); 30 mm sedimentary clast between 728-731 cm, composed of pebbles up to 5 mm in a matrix of diatomaceous mud, grayish olive (10Y 4/2); gradationally changes to flow-in; flow-in between 768-1045 cm.

smear slide:	732 cm
Quartz	38
Feldspar	2
Mica	<<1
Heavy minerals	7
Clay	45
Volcanic glass	<1
Glauconite	<<1
Micro-Mn nodules	<1
Diatoms	8
Radiolarians	<<1
Sponge spicules	<1
Silicoflagellates	<<1

Bottom topography: cored on the Antarctic continental slope.

Logged by: Eggers, Bergen, Graves, Watkins

ISLAS ORCADAS PC 1578-35



LATITUDE: 71°51.5′ S CORR. DEPTH: 2350 M, 1285 FM

LONGITUDE: 17°10.2′ W CORE LENGTH: 1143 CM

LITHOLOGIC DESCRIPTION

0-59 cm: Mud, light olive gray (5Y 5/2), gradationally changing to olive gray (5Y 3/2) at 50 cm; three angular pebbles up to 11 mm between 48-50 cm; 5 mm angular pebble between 54-55 cm; slightly bioturbated between 45-54 cm; gradational contact.

smear slides:	4 cm	42 cm		4 cm	42 cm
Quartz	35	32	Glauconite	<1	<1
Feldspar	<1	1	Diatoms	10	<<1
Mica	<1	1	Radiolarians	<1	-
Heavy minerals	7	7	Sponge spicules	1	<1
Clay	45	57	Silicoflagellates	<<1	-
Volcanic glass	2	2	Ebridians	<<1	-

59-366 cm: Mud, olive gray (5Y 3/2); laminated with coarse silt, composed primarily of quartz particles, olive gray (5Y 3/2); moderately laminated between 59-220 cm and between 252-347 cm; sparsely laminated between 220-252 cm and between 347-366 cm; slightly bioturbated between 220-252 cm; gradational contact.

smear slides:	125 cm	275 cm		125 cm	275 cm
Quartz	48	43	Volcanic glass	1	<1
Feldspar	2	1	Glauconite	1	3
Mica	<1	1	Foraminifera	<1	<<1
Heavy minerals	10	12	Diatoms	-	<<1
Clay	38	40	Sponge spicules	<1	<1

366-480 cm: Mud, light olive gray (5Y 5/2); zone of higher silt content between 415-421 cm; zone of higher diatom content between 421-431 cm; 15 mm angular pebble between 411-413 cm; 10 mm angular pebble between 414-415 cm; 18 mm subangular pebble between 427-429 cm; 1 cm lamina, higher in mud content, olive gray (5Y 3/2), between 476-477 cm; gradational contact.

smear slides:	384 cm	444 cm		384 cm	444 cm
Quartz	28	48	Glauconite	<<1	<1
Feldspar	1	2	Carbonate unspecified	<<1	<<1
Mica	<1	1	Foraminifera	<1	<<1
Heavy minerals	4	6	Diatoms	<1	8
Clay	67	34	Sponge spicules	<1	<1
Volcanic glass	<1	1			

480-695 cm: Mud, olive gray (5Y 3/2); 0.2 cm laminae and stringers of very fine, silt size quartz particles between 566-574 cm and between 622-629 cm; highly laminated with laminae of silt size quartz particles between 664-690 cm; pebbles up to 3 mm sparsely scattered between 542-575 cm; 6 mm angular pebble between 664-665 cm; slightly bioturbated between 500-522 cm; gradational contact.

smear slides:	512 cm	636 cm		512 cm	636 cm
Quartz	35	33	Volcanic glass	<1	2
Feldspar	2	2	Glauconite	1	1
Mica	<1	<1	Foraminifera	-	<1
Heavy minerals	9	7	Diatoms	<1	<<1
Clay	53	55	Sponge spicules	<1	<1

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Logged by: Kaharoeddin, Watkins, Graves, Bergen, Eggers

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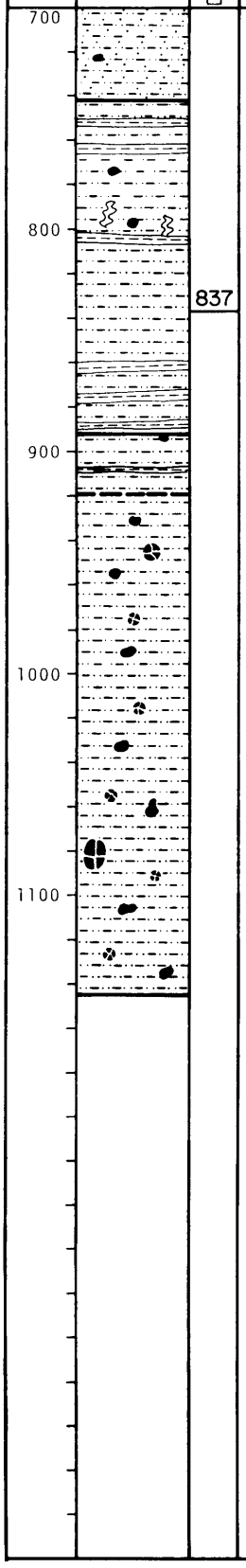


LATITUDE: 71°51.5′ S CORR. DEPTH: 2350 M, 1285 FM

LONGITUDE: 17°10.2′ W CORE LENGTH: 1143 CM

LITHOLOGIC DESCRIPTION

695-742 cm: Sandy mud, olive gray (5Y 3/2); highly laminated with mud, olive gray (5Y 3/2), between 710-722 cm, moderately laminated between 722-742 cm; 4 mm subangular pebble between 722-723 cm; sharp contact.

smear slide:	727 cm		
Quartz	50	Rock fragments	<1
Feldspar	3	Glauconite	5
Mica	1	Carbonate unspecified	<1
Heavy minerals	17	Foraminifera	3
Clay	15	Diatoms	<1
Volcanic glass	5	Sponge spicules	1

742-892 cm: Mud, olive gray (5Y 3/2), highly laminated with laminae of fine, silt size quartz particles between 745-770 cm and between 875-892 cm, moderately laminated between 859-869 cm, slightly laminated between 804-859 cm; 7 mm subangular pebbles between 795-796 cm and 773-774 cm; slightly bioturbated between 790-804 cm; sharp contact.

smear slides:	744 cm	873 cm		744 cm	873 cm
Quartz	50	48	Clay	37	38
Feldspar	2	1	Volcanic glass	<<1	1
Mica	1	<1	Glauconite	1	<1
Heavy minerals	9	12	Diatoms	-	<<1

892-919 cm: Mud, olive gray (5Y 4/1); moderately laminated with very fine, silt size quartz particles between 892-909 cm; laminae contain foraminifera between 893-894 cm; 10 mm subangular pebble between 892-893 cm; 4 mm angular pebble between 907-908 cm; slightly bioturbated lamina of clay, light olive gray (5Y 5/2), between 907-908 cm; gradational contact.

smear slide:	899 cm		
Quartz	39	Volcanic glass	2
Feldspar	1	Glauconite	1
Mica	1	Diatoms	<<1
Heavy minerals	8	Sponge spicules	<1
Clay	48		

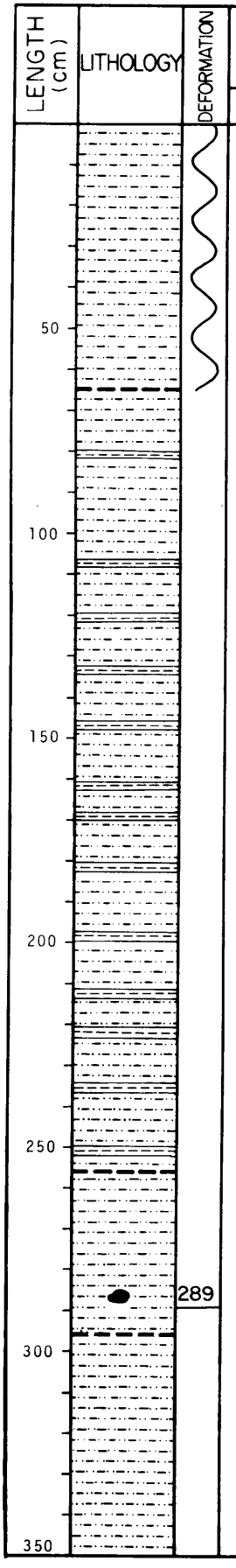
919-1143 cm: Mud, olive gray (5Y 3/2); coarse quartz sand abundant throughout; coarse pebbles common (about every 40 cm); fine and medium pebbles sparsely scattered throughout; 20 mm sedimentary clasts, of various shapes and composed of mud and muddy, diatomaceous ooze, common throughout; 12 cm long sedimentary clast between 1077-1089 cm composed of diatomaceous ooze.

smear slides:	1002 cm	1069 cm	(sedimentary clast) 1084 cm	1135 cm
Quartz	34	53	17	45
Feldspar	2	2	2	2
Mica	<1	<1	<<1	<1
Heavy minerals	10	5	2	8
Clay	40	38	12	31
Volcanic glass	2	1	<1	2
Glauconite	<1	<<1	<1	2
Diatoms	12	1	64	6
Radiolarians	<1	-	2	3
Sponge spicules	<1	<1	1	1
Silicoflagellates	<<1	-	<<1	<1

Bottom topography: cored on the Antarctic continental slope.

Logged by: Kaharoeddin, Watkins, Graves, Bergen, Eggers

ISLAS ORCADAS PC 1578-36



LATITUDE: 71°46.6′ S CORR. DEPTH: 2751 M, 1504 FM

LONGITUDE: 17°31.1′ W CORE LENGTH: 802 CM

LITHOLOGIC DESCRIPTION

0-65 cm: Mud, light olive gray (5Y 5/2); stringers up to 2 mm common between 44-65 cm, composed primarily of silt; slightly disturbed due to freezing; gradational contact.

smear slide:	12 cm
Quartz	36
Feldspar	1
Mica	<1
Heavy minerals	11
Clay	49
Volcanic glass	1
Glauconite	<1
Diatoms	2
Radiolarians	<<1
Sponge spicules	<1

65-256 cm: Mud, olive gray (5Y 3/2); 1 cm lamina between 65-66 cm, composed primarily of silt; laminae up to 5 mm abundant between 100-240 cm, composed primarily of silt; laminae up to 2 mm common between 65-100 cm and 240-256 cm, composed primarily of silt; gradational contact.

smear slide:	75 cm
Quartz	32
Feldspar	2
Mica	<1
Heavy minerals	5
Clay	56
Volcanic glass	1
Carbonate unspecified	1
Foraminifera	3
Diatoms	<<1
Sponge spicules	<<1

256-296 cm: Mud, olive gray (5Y 3/2); unit has higher foraminiferal content than overlying and underlying units; 20 mm subangular metamorphic pebble between 286-288 cm; gradational contact.

smear slide:	266 cm
Quartz	15
Feldspar	2
Mica	1
Heavy minerals	6
Clay	62
Volcanic glass	2
Carbonate unspecified	4
Foraminifera	8
Calcareous nannos	<1
Diatoms	<1
Sponge spicules	<1

296-443 cm: Mud, light olive gray (5Y 5/2); laminae up to 5 mm sparsely scattered throughout, composed primarily of silt; gradational contact.

smear slide:	323 cm
Quartz	28
Feldspar	2
Mica	<1
Heavy minerals	7
Clay	60
Volcanic glass	3
Glauconite	<1
Micro-Mn nodules	<<1
Diatoms	<<1
Sponge spicules	<1

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Logged by: Eggers, Graves

ISLAS ORCADAS PC 1578-36

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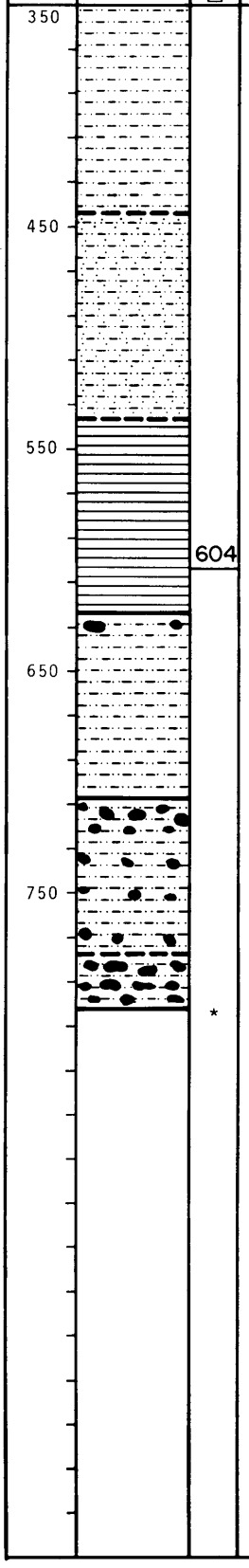


LATITUDE: 71°46.6' S CORR. DEPTH: 2751 M, 1504 FM

LONGITUDE: 17°31.1' W CORE LENGTH: 802 CM

LITHOLOGIC DESCRIPTION

443-535 cm: Sandy mud, olive gray (5Y 3/2); zones of mud containing stringers of silt between 443-449 cm and 503-516 cm; gradational contact.

smear slide:	465 cm
Quartz	45
Feldspar	4
Mica	2
Heavy minerals	14
Clay	20
Volcanic glass	2
Rock fragments	<1
Glauconite	8
Carbonate unspecified	1
Foraminifera	4
Sponge spicules	<1

535-623 cm: Clay, olive gray (5Y 3/2); stringers of silt abundant between 535-543 cm; sharp contact.

smear slide:	564 cm
Quartz	17
Feldspar	1
Mica	<1
Heavy minerals	3
Clay	76
Volcanic glass	1
Glauconite	<<1
Carbonate unspecified	2

623-707 cm: Mud, grayish olive (10Y 4/2) gradationally changing at 660 cm to light olive gray (5Y 5/2); subrounded pebbles between 626-629 cm (25 mm) and 624-625 cm (10 mm); sharp contact.

smear slide:	637 cm
Quartz	35
Feldspar	1
Mica	<1
Heavy minerals	5
Clay	57
Glauconite	<1
Carbonate unspecified	2
Sponge spicules	<1

707-778 cm: Mud, light olive gray (5Y 5/2); layer of clay between 711-713 cm; pebbles up to 20 mm common between 707-711 cm; pebbles up to 5 mm abundant between 732-736 cm, 749-750 cm, and 766-771 cm; layer of pebbles grading from coarse pebbles at 713 cm to very fine pebbles at 724 cm; gradational contact. NOTE: smear slide is biased toward the fine fraction.

smear slide:	737 cm
Quartz	18
Feldspar	2
Mica	<1
Heavy minerals	4
Clay	74
Volcanic glass	1
Diatoms	1
Radiolarians	<1
Sponge spicules	<1

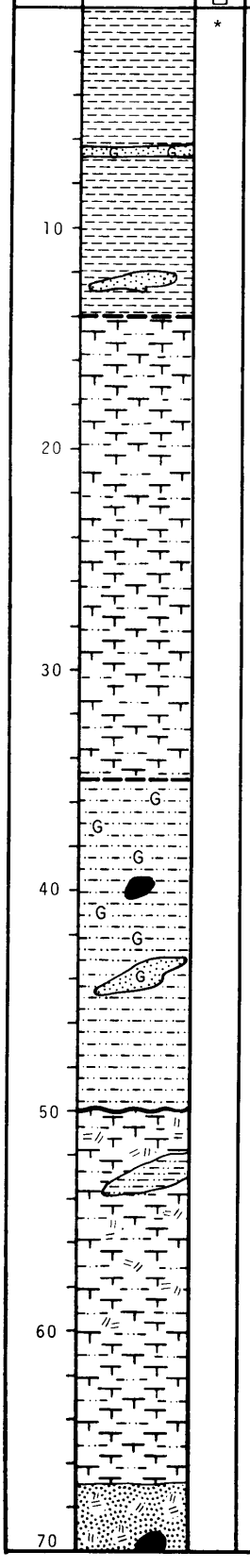
778-802 cm: Pebbly mud, light olive gray (5Y 5/2); pebble size decreases from fine pebbles at 778 cm to very fine pebbles at 801 cm.

Bottom topography: cored on the Antarctic continental slope.

*NOTE: Sediment between 801-802 cm is bagged.

Logged by: Eggers, Graves

ISLAS ORCADAS PC 1578-37



LATITUDE: 71°31.6' S CORR. DEPTH: 3681 M, 2013 FM

LONGITUDE: 18°07.5' W CORE LENGTH: 1139 CM

LITHOLOGIC DESCRIPTION

0-14 cm: Silt, olive gray (5Y 4/1); glauconite sparsely scattered throughout; 0.3 cm lamina between 6-7 cm, composed of glauconitic sand containing foraminifera; 1 cm irregular lens between 12-13 cm, composed of sand containing glauconite and foraminifera; slightly washed along the side between 0-14 cm; gradational contact.

smear slide:	5 cm		
Quartz	66	Glauconite	3
Feldspar	5	Carbonate unspecified	<<1
Mica	<1	Foraminifera	1
Heavy minerals	12	Diatoms	<1
Clay	10	Radiolarians	<<1
Volcanic glass	2	Sponge spicules	<1
Rock fragments	1		

14-35 cm: Marly, foraminiferal ooze, light olive gray (5Y 5/2); glauconite sparsely scattered throughout; slightly washed along the side between 14-35 cm; gradational contact.

smear slide:	26 cm		
Quartz	18	Glauconite	2
Feldspar	<1	Carbonate unspecified	5
Mica	2	Foraminifera	33
Heavy minerals	5	Diatoms	<<1
Clay	33	Sponge spicules	<1
Volcanic glass	2		

35-50 cm: Mud, olive gray (5Y 4/1) between 35-44 cm, changing to light olive gray (5Y 5/2) between 44-50 cm; sand content decreases with depth; glauconite common between 35-44 cm; 2 cm irregular lens between 43-45 cm, composed of glauconitic sand; 15 mm subangular pebble between 39-41 cm; slightly washed along the side between 35-50 cm; sharp, irregular contact.

smear slides:	36 cm	45 cm		36 cm	45 cm
Quartz	56	46	Glauconite	1	2
Feldspar	1	<1	Micro-Mn nodules	<<1	<1
Mica	<1	<<1	Carbonate unspecified	<<1	-
Heavy minerals	10	8	Foraminifera	<1	6
Clay	27	35	Diatoms	<<1	-
Volcanic glass	5	3	Sponge spicules	<1	-

50-76 cm: Marly, foraminiferal ooze, olive gray (5Y 4/1); volcanic ash common between 50-60 cm, sparsely scattered between 60-76 cm; layer of sand rich in volcanic ash between 67-70 cm; 1 cm inclined lens between 52-54 cm, composed of mud; 14 mm subangular quartz pebble between 69-71 cm; slightly washed along the side between 50-76 cm; gradational contact.

smear slide:	60 cm		
Quartz	27	Volcanic glass	1
Feldspar	1	Glauconite	3
Mica	<<1	Foraminifera	35
Heavy minerals	5	Diatoms	<<1
Clay	28	Sponge spicules	<1

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Logged by: Goldstein, Kaharoeddin, Watkins, Redmond

(SC)

ISLAS ORCADAS PC 1578-37

LENGTH (cm) | LITHOLOGY | DEFORMATION

LATITUDE: 71°31.6′ S CORR. DEPTH: 3681 M, 2013 CM

LONGITUDE: 18°07.5′ W CORE LENGTH: 1139 CM

LITHOLOGIC DESCRIPTION

70

76-105 cm: Mud, grayish olive (10Y 4/2); micro-manganese nodules and sand, coated with manganese oxides, sparsely scattered throughout; zone of higher foraminiferal content between 82-86 cm; sharp contact.

smear slide:	86 cm
Quartz	40
Feldspar	5
Mica	2
Heavy minerals	9
Clay	26
Volcanic glass	3
Glauconite	6
Carbonate unspecified	2
Foraminifera	6
Diatoms	<<1
Sponge spicules	1

100

150

105-170 cm: Mud, light olive gray (5Y 5/2); volcanic ash common throughout; pebbles up to 18 mm common between 112-130 cm; a 4 mm pebble, coated with manganese oxides, between 130-131 cm; subangular pebbles coated with manganese oxides between 155-157 cm (18 mm) and 156-158 cm (9 mm); pieces of imploded liner embedded in sediment between 152-167 cm (15 cm) and between 157-165 cm (8 cm); moderately disturbed between 152-167 cm; gradational contact.

smear slide:	150 cm
Quartz	25
Feldspar	2
Mica	<1
Heavy minerals	5
Clay	58
Volcanic glass	2
Glauconite	1
Diatoms	5
Radiolarians	<<1
Sponge spicules	2

200

224

250

170-310 cm: Diatomaceous mud, light olive gray (5Y 5/2); diatom content varies with depth; radiolarian content decreases with depth; volcanic ash common throughout; subrounded to subangular pebbles up to 24 mm, coated with manganese oxides, abundant between 258-265 cm; subrounded to subangular pebbles up to 13 mm sparsely scattered between 290-310 cm; slightly bioturbated throughout; gradational contact.

smear slides:	180 cm	275 cm
Quartz	25	25
Feldspar	1	1
Mica	<1	<1
Heavy minerals	3	4
Clay	29	25
Volcanic glass	<1	1
Glauconite	<<1	<1
Diatoms	35	39
Radiolarians	4	3
Sponge spicules	1	1
Silicoflagellates	<1	<<1
Ebridians	2	1

300

350

400

420

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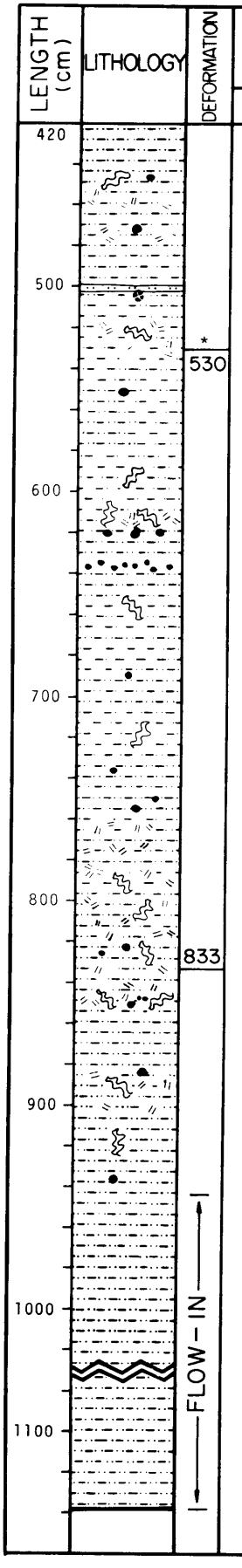
Logged by: Goldstein, Kaharoeddin, Watkins, Redmond

ISLAS ORCADAS PC 1578-37



LATITUDE: 71°31.6′ S CORR. DEPTH: 3681 M, 2013 FM

LONGITUDE: 18°07.5′ W CORE LENGTH: 1139 CM

LITHOLOGIC DESCRIPTION

310-1139 cm: Mud, moderate olive brown (5Y 4/4); volcanic ash abundant between 790-800 cm, common between 450-479 cm, 510-535 cm, 610-620 cm, 760-790 cm, 805-845 cm, and 885-902 cm, sparsely scattered between 310-450 cm, 500-510 cm, 535-610 cm, 620-655 cm, 742-760 cm, 846-870 cm and 902-917 cm; layer of muddy sand between 408-411 cm (3 cm) and 499-501 cm (2 cm); 2 cm layer of volcanic ash between 844-846 cm, bioturbated; 1 cm lamina of mud, containing abundant foraminifera, between 390-391 cm; sedimentary clasts between 411-412 cm (10 mm), 411-413 cm (20 mm) and 502-503 cm (5 mm), composed of sand-size quartz, heavy minerals and volcanic glass, dark yellowish brown (10YR 4/2), soft; manganese oxide-coated pebbles common between 332-334 cm (median diameter 8 mm) and 618-622 cm (median diameter 20 mm), sparsely scattered between 386-472 cm (median diameter 7 mm); subangular to subrounded igneous pebbles abundant between 633-635 cm (median diameter 3 mm), sparsely scattered between 690-760 cm (median diameter 12 mm) and 820-940 cm (median diameter 15 mm); moderately bioturbated between 600-620 cm, 785-810 cm, and 840-850 cm; slightly bioturbated between 310-530 cm, 590-600 cm, 620-785 cm, 810-840 cm, and 850-917 cm; gradationally changing to flow-in at 943 cm; flow-in between 943-1139 cm.

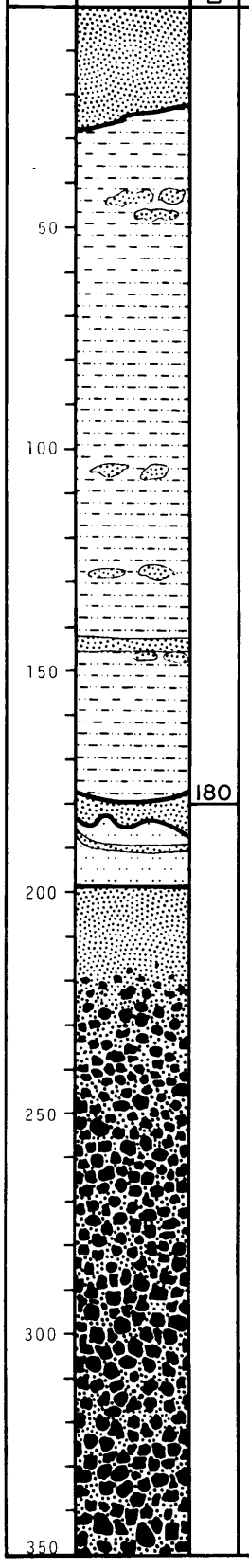
smear slides:	354 cm	545 cm	675 cm	871 cm
Quartz	40	57	53	35
Feldspar	1	1	1	1
Mica	<1	<1	1	1
Heavy minerals	8	7	10	8
Clay	44	29	30	47
Volcanic glass	3	3	3	2
Glauconite	<1	<1	-	1
Micro-Mn nodules	<<1	<<1	-	-
Diatoms	3	3	2	4
Sponge spicules	1	<1	<1	1
Silicoflagellates	<<1	<<1	-	<<1
Ebridians	-	-	-	<<1

Bottom topography: cored on the Antarctic continental slope.

*NOTE: Sediment between 0-1 cm and 529-530 cm is bagged.

Logged by: Goldstein, Kaharoeddin, Watkins, Redmond

ISLAS ORCADAS PC 1578-38



LATITUDE: 71°14.2′ S WATER DEPTH: 4301 M, 2352 FM

LONGITUDE: 19°08.8′ W CORE LENGTH: 486 CM

LITHOLOGIC DESCRIPTION

0-26 cm: Sand, olive gray (5Y 3/2), moderately well-sorted, grain size increases with depth from a very fine to fine sand; foraminifera present, content increasing slightly with depth; slightly washed along the side; sharp, inclined, irregular contact.

smear slide:	2 cm
Quartz	72
Feldspar	3
Mica	<1
Heavy minerals	17
Clay	<1
Volcanic glass	2
Glauconite	5
Carbonate unspecified	<1
Foraminifera	1
Sponge spicules	<1

26-178 cm: Mud, light olive gray (5Y 5/2); foraminifera present between 62-91 cm and 108-148 cm; layer of sand between 143-145 cm, olive gray (5Y 3/2), containing foraminifera, with sharp and irregular contacts; lenses of sand up to 1.2 cm thick between 43-49 cm, 104-107 cm, 128-130 cm, and 145-147 cm, olive gray (5Y 3/2), all containing foraminifera; stringers of mud common between 51-52 cm, rich in volcanic ash, olive gray (5Y 4/1); abundant stringers between 172-178 cm, composed of silt to very fine sand, light olive gray (5Y 5/2); slightly washed along the side; sharp, curved contact.

smear slides:	52 cm	118 cm	172 cm
Quartz	27	40	46
Feldspar	1	2	2
Mica	<1	<<1	<1
Heavy minerals	8	11	12
Clay	63	18	36
Volcanic glass	<1	3	3
Glauconite	<<1	4	1
Carbonate unspecified	1	12	-
Foraminifera	<<1	10	-
Calcareous nannos	<<1	-	-
Diatoms	<<1	-	-
Sponge spicules	<<1	<1	<1

178-184 cm: Medium sand, olive gray (5Y 3/2); moderately sorted; foraminifera present; slightly washed along the side; sharp, irregular contact.

184-199 cm: Muddy sand, light olive gray (5Y 5/2); coarse fraction consisting of well-sorted, fine sand; core sediment separated between 190-192 cm, with sediment from the overlying sand unit filling this crack, and present in the wash along the side; slightly washed along the side; sharp contact.

smear slide:	197 cm
Quartz	50
Feldspar	1
Mica	<1
Heavy minerals	9
Clay	22
Volcanic glass	5
Glauconite	3
Carbonate unspecified	4
Foraminifera	6
Sponge spicules	<1

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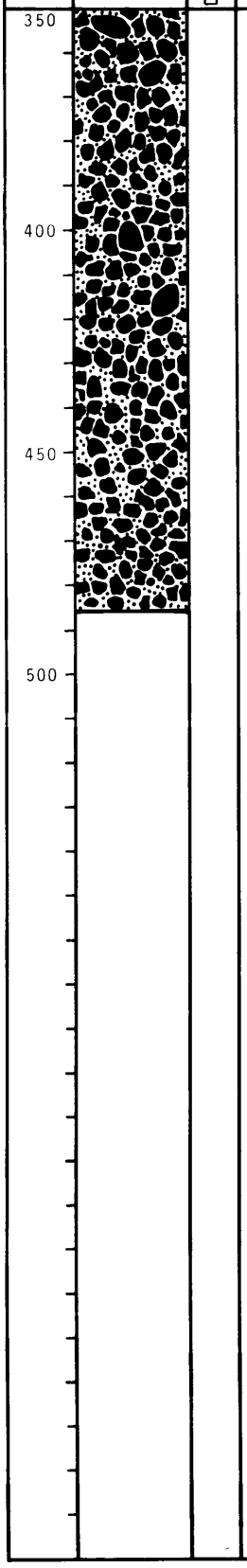
Logged by: Bergen, Eggers, Graves

ISLAS ORCADAS PC 1578-38



LATITUDE: 71°14.2′ S
WATER DEPTH: 4301 M, 2352 FM
LONGITUDE: 19°08.8′ W
CORE LENGTH: 486 CM

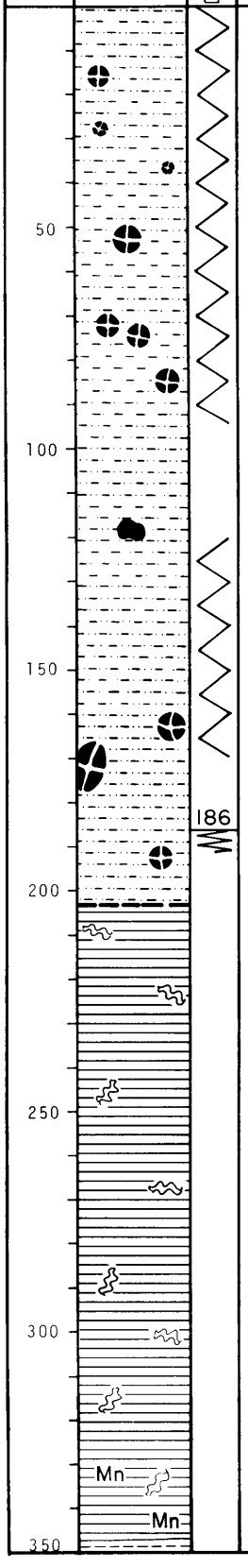
LITHOLOGIC DESCRIPTION

199-486 cm: Pebbles, olive gray (5Y 3/2); very fine-grained pebbles are dominant throughout; increase in the number of large pebbles with depth; layer of sand between 199-217 cm, olive gray (5Y 3/2), composed of medium to coarse sand with grain size increasing with depth, grading into pebble unit; much larger pebbles, subangular to subrounded, between 352-356 cm (32 mm), 365-368 cm (27 mm) 402-405 cm (28 mm) and 415-419 cm (21 mm).

Bottom topography: abyssal plain.

Logged by: Bergen, Eggers, Graves

ISLAS ORCADAS PC 1578-39



LATITUDE: 70°39.4′ S CORR. DEPTH: 4334 M, 2370 FM

LONGITUDE: 21°34.6′ W CORE LENGTH: 796 CM

LITHOLOGIC DESCRIPTION

0-203 cm: Mud, light olive gray (5Y 5/2); sedimentary clasts composed of silt, light olive gray (5Y 5/2), slightly compacted, between 15-18 cm (28 mm), 82-88 cm (60 mm, highly compacted), 161-165 cm (34 mm), 167-178 cm (109 mm, ellipsoidal), and 183-185 cm (20 mm); sedimentary clasts composed of mud, light olive gray (5Y 5/2), soft, between 51-53 cm (13 mm), 72-74 cm (12 mm), 74-76 cm (8 mm), and up to 20 mm sparsely scattered between 24-42 cm; 12 mm subangular pebble between 118-120 cm; highly disturbed due to freezing between 0-40 cm and 120-170 cm; moderately disturbed due to freezing between 40-94 cm and 186-191 cm; slightly washed along the side between 170-175 cm; gradational contact.

smear slides:	76 cm	145 cm
Quartz	48	21
Feldspar	2	1
Mica	<1	<1
Heavy minerals	11	6
Clay	36	71
Volcanic glass	2	1
Diatoms	<<1	-
Sponge spicules	1	<1

203-429 cm: Pelagic clay, light olive gray (5Y 5/2); moderately stained with manganese oxides between 330-403 cm, slightly stained between 203-330 cm; 4 cm layer, rich in silt, between 425-429 cm; layers between 348-351 cm (3 cm) and 403-405 cm (2 cm), composed of silt, light olive gray (5Y 5/2); laminae between 238-239 cm (10 mm, inclined) and 368-369 cm (3 mm), composed of silt, light olive gray (5Y 5/2); stringers common between 256-257 cm, composed of silt, light olive gray (5Y 5/2); sedimentary clasts up to 10 mm common between 388-392 cm, composed of silt, light olive gray (5Y 5/2); moderately bioturbated between 203-403 cm; gradational contact.

smear slides:	231 cm	396 cm
Quartz	26	24
Feldspar	1	2
Mica	1	<1
Heavy minerals	8	6
Clay	62	66
Volcanic glass	2	2
Sponge spicules	<1	-

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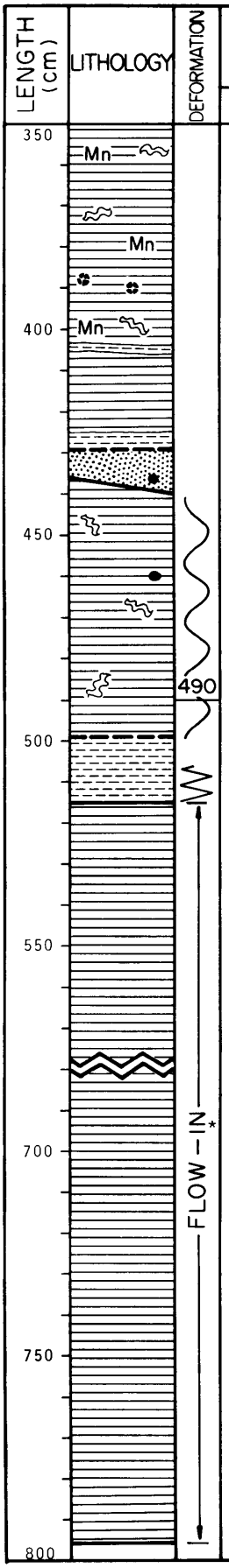
Logged by: Bergen, Graves, Eggers

ISLAS ORCADAS PC 1578-39



LATITUDE: 70°39.4′ S CORR. DEPTH: 4334 M, 2370 FM

LONGITUDE: 21°34.6′ W CORE LENGTH: 796 CM

LITHOLOGIC DESCRIPTION

429-440 cm: Sand, light olive gray (5Y 5/2); grain size increases with depth from very fine sand to fine sand; increasing heavy mineral content with depth; 10 mm subrounded pebble between 437-438 cm; sharp, inclined contact between 436-440 cm.

smear slide:	435 cm
Quartz	73
Feldspar	3
Mica	6
Heavy minerals	12
Clay	<1
Volcanic glass	2
Glauconite	4

440-499 cm: Pelagic clay, light olive gray (5Y 5/2); slightly stained with manganese oxides; stringers common between 494-497 cm, composed of silt, light olive gray (5Y 5/2); 20 mm subangular pebble between 459-461 cm; slightly bioturbated; slightly disturbed due to freezing; gradational contact.

smear slide:	450 cm
Quartz	28
Feldspar	2
Mica	1
Heavy minerals	5
Clay	63
Volcanic glass	1

499-515 cm: Silt, light olive gray (5Y 5/2); moderately disturbed due to freezing between 506-515 cm; sharp contact.

smear slide:	502 cm
Quartz	65
Feldspar	3
Mica	<<1
Heavy minerals	21
Clay	3
Volcanic glass	4
Glauconite	4

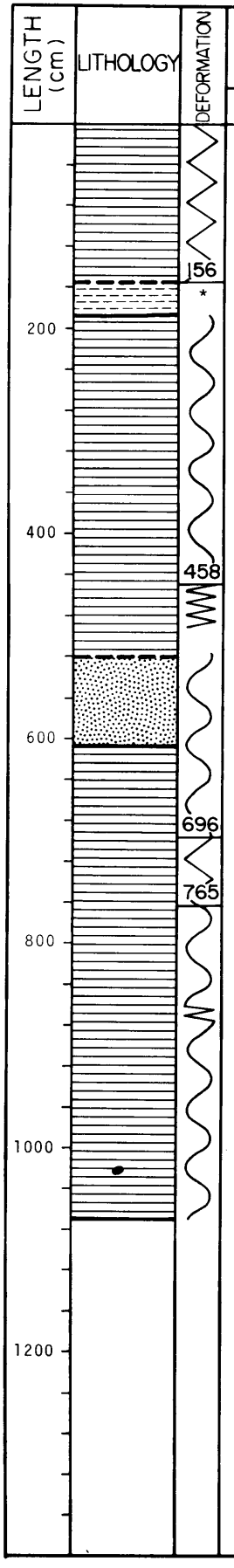
515-796 cm: Pelagic clay, light olive gray (5Y 5/2); slightly stained with manganese oxides; flow-in between 515-796 cm.

Bottom topography: slight rise on Weddell Sea abyssal plain.

*NOTE: Sediment between 684-692 cm is bagged.

Logged by: Bergen, Graves, Eggers

ISLAS ORCADAS PC 1578-40



LATITUDE: 69°58.9′ S CORR. DEPTH: 4481 M, 2450 FM

LONGITUDE: 26°02.2′ W CORE LENGTH: 1070 CM

LITHOLOGIC DESCRIPTION

0-156 cm: Pelagic clay, light olive gray (5Y 5/2); moderately disturbed due to freezing; gradational contact.

smear slides:	17 cm	132 cm		17 cm	132 cm
Quartz	18	12	Clay	72	84
Feldspar	1	<1	Volcanic glass	1	<1
Mica	<<1	<<1	Micro-Mn nodules	<<1	<<1
Heavy minerals	8	4			

156-187 cm: Silt, olive gray (5Y 3/2); grain size increases with depth; irregular, sharp contact.

smear slide:	168 cm		
Quartz	56	Clay	8
Feldspar	5	Volcanic glass	12
Mica	<1	Rock fragments	2
Heavy minerals	17	Sponge spicules	<<1

187-521 cm: Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered throughout; zone of higher silt content between 492-521 cm; layer of higher silt content between 385-400 cm; highly disturbed between 458-471 cm; moderately disturbed between 471-490 cm; slightly disturbed between 187-458 cm; disturbances due to freezing; gradational contact.

smear slides:	200 cm	419 cm		200 cm	419 cm
Quartz	5	7	Clay	84	81
Feldspar	3	4	Volcanic glass	2	3
Mica	<1	-	Micro-Mn nodules	<1	-
Heavy minerals	5	4	Zeolite	1	1

521-607 cm: Very fine sand, olive gray (5Y 3/2); well-sorted; slightly disturbed between 521-607 cm due to freezing; sharp contact.

smear slide:	539 cm		
Quartz	69	Volcanic glass	8
Feldspar	2	Rock fragments	4
Heavy minerals	10	Glauconite	6
Clay	1	Micro-Mn nodules	<1

607-1070 cm: Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered throughout; layer of silt, olive gray (5Y 3/2), between 623-627 cm; layer composed predominantly of silt between 653-658 cm; 50 mm pebble slightly encrusted with micro-manganese nodules between 1018-1023 cm; moderately disturbed between 696-765 cm and 860-874 cm; slightly disturbed between 607-696 cm, 765-860 cm and 874-1070 cm; disturbances due to freezing.

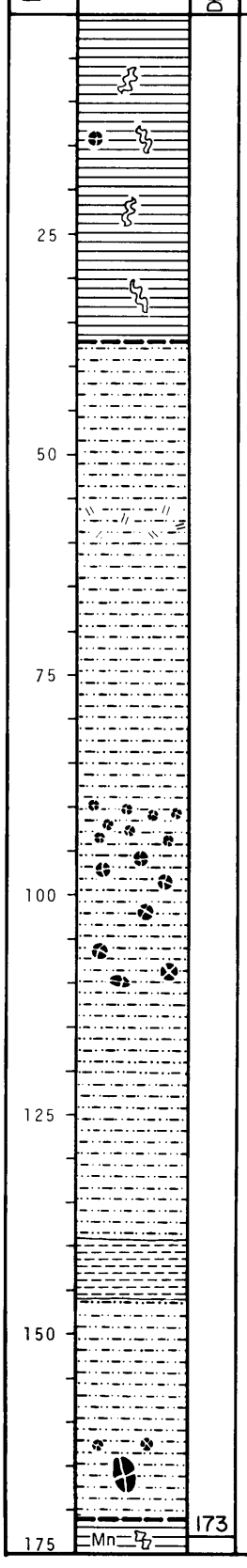
smear slides:	615 cm	652 cm	880 cm
Quartz	18	33	15
Feldspar	4	1	2
Mica	<1	7	1
Heavy minerals	7	8	6
Clay	65	49	71
Volcanic glass	2	<1	2
Glauconite	<1	-	-
Micro-Mn nodules	4	2	3
Zeolite	<1	<1	<1
Diatoms	<<1	-	-

Bottom topography: flat, abyssal plain.

*NOTE: Sediment between 156-158 cm is bagged.

Logged by: Graves, Eggers

ISLAS ORCADAS PC 1578-41



LATITUDE: 69°00.5′ S CORR. DEPTH: 4631 M, 2532 FM

LONGITUDE: 24°46.6′ W CORE LENGTH: 471 CM

LITHOLOGIC DESCRIPTION

0-37 cm: Pelagic clay, light olive gray (5Y 6/1); zone of higher silt content between 0-6 cm; micro-manganese nodules sparsely scattered throughout; stringers rich in volcanic ash abundant between 11-37 cm; 4 mm sedimentary clast between 14-15 cm, composed of mud, light olive gray (5Y 5/2), slightly compacted; moderately bioturbated between 6-37 cm; moderately washed along the side between 20-37 cm; slightly washed along the side between 6-20 cm; gradational contact.

smear slides:	(zone) 4 cm	28 cm
Quartz	30	11
Feldspar	1	<1
Mica	1	-
Heavy minerals	8	4
Clay	58	80
Volcanic glass	3	5
Glauconite	<<1	-
Diatoms	<1	-
Sponge spicules	<1	-

37-171 cm: Mud, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered between 162-166 cm; zone of higher volcanic ash content between 55-60 cm; layer of silt between 139-146 cm, moderate olive brown (5Y 4/4); discontinuous stringers of silt common between 130-135 cm; sedimentary clasts up to 5 mm abundant between 89-95 cm, composed of silt, light olive gray (5Y 5/2), compacted; sedimentary clasts ranging in size from 6-20 mm common between 96-111 cm, composed of silt, light olive gray (5Y 5/2), compacted; two 5 mm sedimentary clasts between 162-164 cm, composed of silt, light olive gray (5Y 5/2), compacted; 40 mm sedimentary clast between 164-169 cm, composed of silt, moderate olive brown (5Y 4/4), irregular in shape and moderately compacted; gradational contact.

smear slide:	84 cm
Quartz	35
Feldspar	1
Mica	1
Heavy minerals	10
Clay	49
Volcanic glass	3
Glauconite	1
Sponge spicules	<1

171-239 cm: Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules common throughout; three sedimentary clasts up to 4 mm between 215-216 cm, composed of mud, light olive gray (5Y 5/2); slightly bioturbated throughout; gradational contact.

smear slide:	227 cm
Quartz	13
Feldspar	<1
Mica	<1
Heavy minerals	3
Clay	81
Volcanic glass	3

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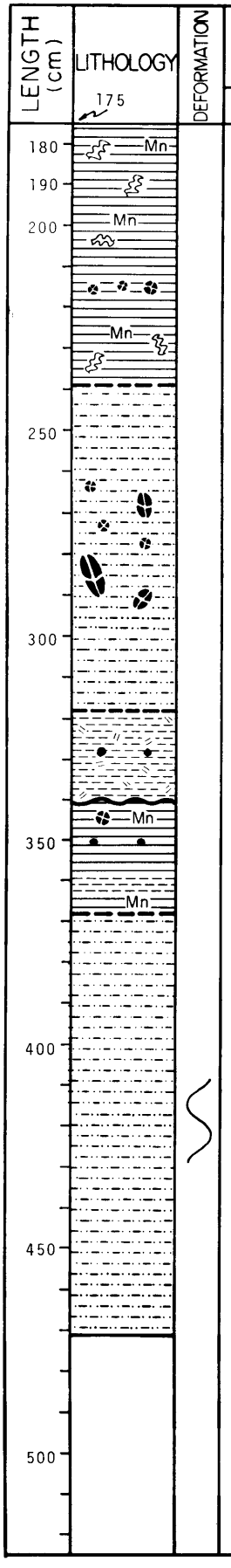
Logged by: Bergen, Graves

(SC)

ISLAS ORCADAS PC 1578-41



LATITUDE: 69°00.5′ S CORR. DEPTH: 4631 M, 2532 FM

LONGITUDE: 24°46.6′ W CORE LENGTH: 471 CM

LITHOLOGIC DESCRIPTION

239-318 cm: Mud, light olive gray (5Y 5/2); higher silt content between 310-318 cm; zone of lower silt content between 273-290 cm; sedimentary clasts up to 2 mm sparsely scattered between 262-278 cm, composed of silt, light olive gray (5Y 5/2); three sedimentary clasts, composed of silt, light olive gray (5Y 5/2), irregular in shape and compacted, between 268-271 cm (26 mm), 281-292 cm (101 mm),and 292-295 cm (30 mm); gradational contact.

smear slide:	306 cm
Quartz	25
Feldspar	2
Mica	1
Heavy minerals	12
Clay	58
Volcanic glass	1
Glauconite	1

318-341 cm: Ash-bearing silt, moderate olive brown (5Y 4/4), moderately well-sorted; size increases with depth from fine to coarse silt; 15 mm subangular pebble between 327-331 cm; 9 mm subrounded pebble between 329-330 cm; sharp, irregular contact.

smear slide:	325 cm
Quartz	34
Feldspar	2
Mica	1
Heavy minerals	37
Clay	6
Volcanic glass	17
Glauconite	3

341-368 cm: Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules common throughout; layer of silt between 360-365 cm, moderate olive brown (5Y 4/4); 10 mm sedimentary clast between 344-346 cm, composed of silt, moderate olive brown (5Y 4/4), compacted; two 5 mm subangular pebbles between 351-352 cm; gradational contact.

smear slide:	351 cm
Quartz	7
Feldspar	1
Heavy minerals	3
Clay	87
Volcanic glass	2

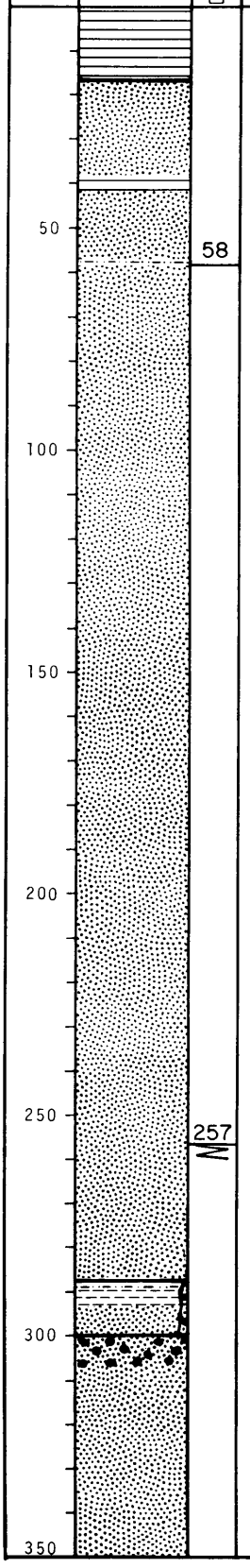
368-471 cm: Mud, light olive gray (5Y 5/2); slightly disturbed between 408-429 cm; slightly washed along the side between 390-461 cm.

smear slide:	434 cm
Quartz	42
Feldspar	1
Mica	2
Heavy minerals	6
Clay	45
Volcanic glass	3
Glauconite	1

Bottom topography: flat, abyssal plain.

Logged by: Bergen, Graves

ISLAS ORCADAS PC 1578-42



LATITUDE: 67°59.3' S
LONGITUDE: 23°26.1' W
CORR. DEPTH: 4746 M, 2595 FM
CORE LENGTH: 848 CM

LITHOLOGIC DESCRIPTION

0-17 cm: Pelagic clay, light olive gray (5Y 5/2); moderately washed along the side; sharp contact.

smear slide:	6 cm
Quartz	35
Feldspar	1
Mica	<1
Heavy minerals	5
Clay	56
Volcanic glass	2
Glauconite	<1
Carbonate unspecified	1
Foraminifera	<<1
Diatoms	<<1

17-287 cm: Sand, light olive gray (5Y 5/2); grain size increases and sorting decreases with depth between 17-280 cm from a fine, moderately well-sorted sand to a coarse, poorly sorted sand; zone of fine sand between 280-287 cm, light olive gray (5Y 5/2); layer of pelagic clay between 38-41 cm, light olive gray (5Y 5/2); lamina of mud between 57-58 cm, olive gray (5Y 3/2); highly disturbed between 257-260 cm; sharp contact.

smear slide:	25 cm
Quartz	87
Feldspar	3
Mica	<1
Heavy minerals	7
Clay	1
Volcanic glass	1
Carbonate unspecified	1
Foraminifera	<1

287-300 cm: Unit of laminated clastics, grading from mud between 287-289 cm, light olive gray (5Y 5/2), to silt between 289-293 cm, light olive gray (5Y 5/2), and to a fine sand between 293-300 cm, dusky yellow (5Y 6/4); moderately washed along the side between 287-300 cm, filled-in with pebbly sand from the underlying unit; sharp contact.

smear slides:	290 cm	297 cm
Quartz	70	91
Feldspar	2	3
Mica	1	<<1
Heavy minerals	15	4
Clay	5	<1
Volcanic glass	7	2
Glauconite	-	<1
Diatoms	<<1	-
Radiolarians	<<1	-
Sponge spicules	<1	-

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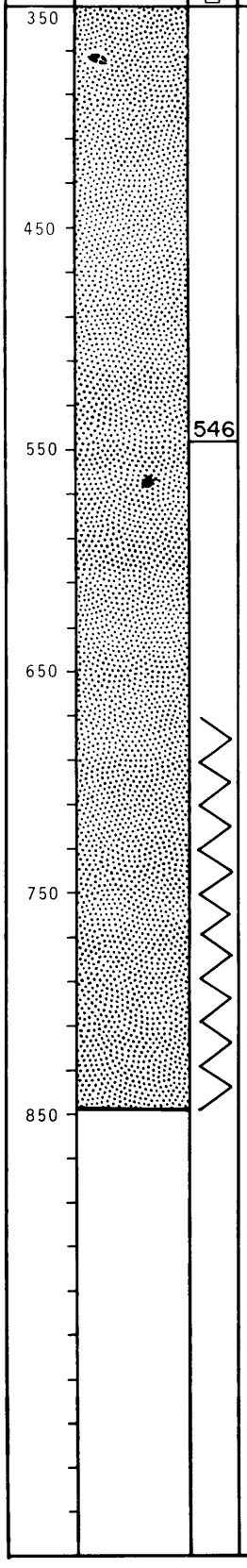
Logged by: Bergen, Graves, Eggers

(SC)

ISLAS ORCADAS PC 1578-42

LATITUDE: 67°59.3' S CORR. DEPTH: 4746 M, 2595 FM

LONGITUDE: 23°26.1' W CORE LENGTH: 848 CM



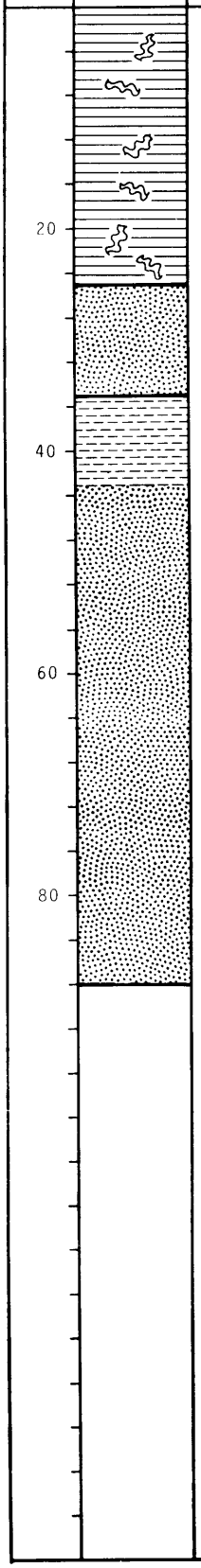
LITHOLOGIC DESCRIPTION

300-848 cm: Sand, light olive gray (5Y 5/2), varying between fine to medium sand, moderately sorted; layer of pebbly sand between 300-307 cm; 10 mm sedimentary clast between 374-375 cm, composed of clay, olive gray (5Y 3/2); 11 mm subangular pebble between 565-567 cm; highly disturbed between 661-848 cm; moderately washed along the side between 601-670 cm; slightly washed along the side between 300-601 cm, filled with fine sand between 300-320 cm.

Bottom topography: flat, abyssal plain.

Logged by: Bergen, Graves, Eggers

ISLAS ORCADAS PC 1578-43



LATITUDE: 67°00.3' S CORR. DEPTH: 4812 M, 2631 FM

LONGITUDE: 22°07.1' W CORE LENGTH: 88 CM

LITHOLOGIC DESCRIPTION

0-25 cm: Pelagic clay, light olive gray (5Y 5/2); increasing silt content with depth; highly bioturbated; slightly washed along the side; sharp contact.

smear slide:	5 cm
Quartz	7
Feldspar	<1
Heavy minerals	3
Clay	85
Volcanic glass	3
Micro-Mn nodules	2
Zeolite	<1
Calcareous nannos	<<1
Diatoms	<<1

25-35 cm: Fine sand, light olive gray (5Y 5/2); poorly sorted; moderately washed along the side; sharp contact.

smear slide:	29 cm
Quartz	75
Feldspar	3
Mica	<1
Heavy minerals	5
Clay	12
Volcanic glass	5
Rock fragments	<1
Micro-Mn nodules	<1
Sponge spicules	<1

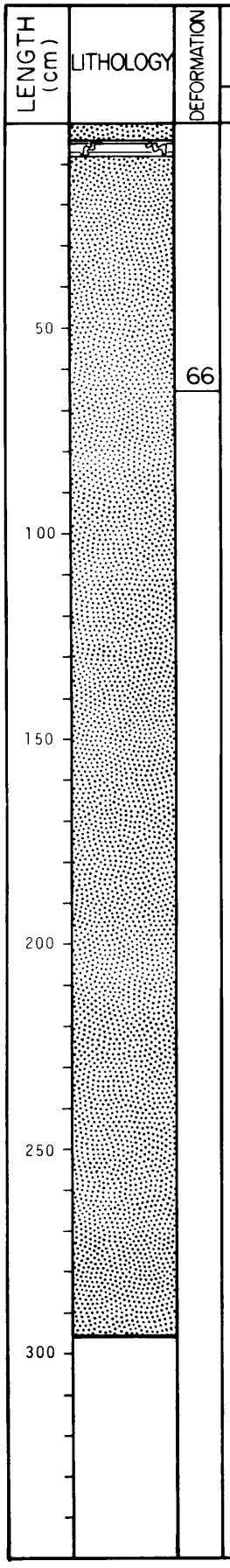
35-88 cm: Sand, light olive gray (5Y 5/2), poorly sorted, size increasing from fine sand at 43 cm to coarse sand at 80 cm; layer of silt between 35-43 cm, light olive gray (5Y 5/2), well sorted; inclined 5 mm laminae between 40-43 cm, composed of volcanic ash, brownish black (5YR 2/1); slightly washed along the side between 35-40 cm.

smear slide:	36 cm (silt)
Quartz	71
Feldspar	1
Mica	1
Heavy minerals	22
Clay	1
Volcanic glass	3
Micro-Mn nodules	<1
Sponge spicules	1

Bottom topography: abyssal plain.

Logged by: Graves, Bergen

ISLAS ORCADAS PC 1578-44



LATITUDE: 66°00.9′ S CORR. DEPTH: 4857 M, 2656 FM

LONGITUDE: 20°53.4′ W CORE LENGTH: 296 CM

LITHOLOGIC DESCRIPTION

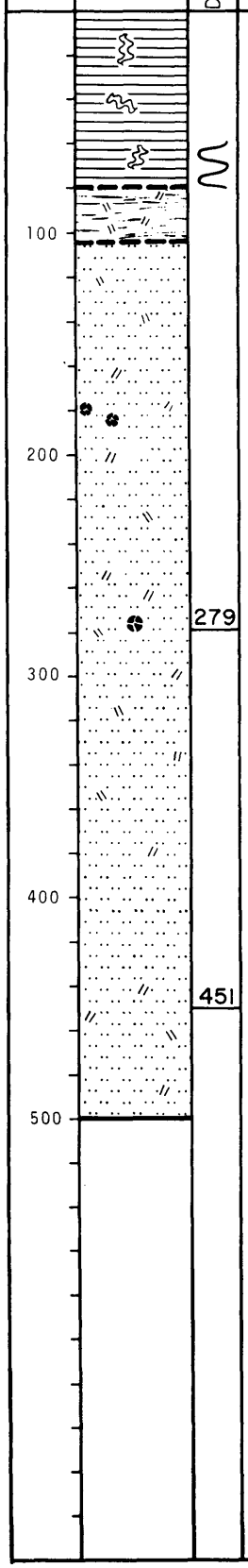
0-296 cm: Medium sand, dark yellowish brown (10YR 4/2); moderately well-sorted; 4 cm layer of pelagic clay, dark yellowish brown (10YR 4/2), between 4-8 cm; moderately bioturbated between 4-8 cm; washed along the side between 9-46 cm.

smear slides:	7 cm (layer)	146 cm
Quartz	8	94
Feldspar	2	<1
Mica	<1	-
Heavy minerals	4	1
Clay	82	3
Volcanic glass	3	-
Rock fragments	-	2
Micro-Mn nodules	-	<1
Diatoms	1	-

Bottom topography: abyssal plain.

Logged by: Eggers, Bergen, Graves

ISLAS ORCADAS PC 1578-45



LATITUDE: 64°54.5′ S CORR. DEPTH: 4898 M, 2678 FM

LONGITUDE: 19°58.3′ W CORE LENGTH: 500 CM

LITHOLOGIC DESCRIPTION

0-80 cm: Pelagic clay, light olive gray (5Y 5/2); sand content increases with depth between 70-80 cm; micro-manganese nodules sparsely scattered between 70-80 cm; slightly bioturbated throughout; slightly disturbed between 60-80 cm; gradational contact.

smear slides:	13 cm	59 cm
Quartz	30	37
Feldspar	1	1
Mica	<1	1
Heavy minerals	3	5
Clay	65	55
Volcanic glass	1	1
Diatoms	<<1	<<1

80-105 cm: Sandy silt, light olive gray (5Y 5/2); volcanic ash common throughout; micro-manganese nodules sparsely scattered throughout; gradational contact.

smear slide:	88 cm
Quartz	79
Feldspar	2
Mica	1
Heavy minerals	6
Clay	10
Volcanic glass	2
Micro-Mn nodules	<1

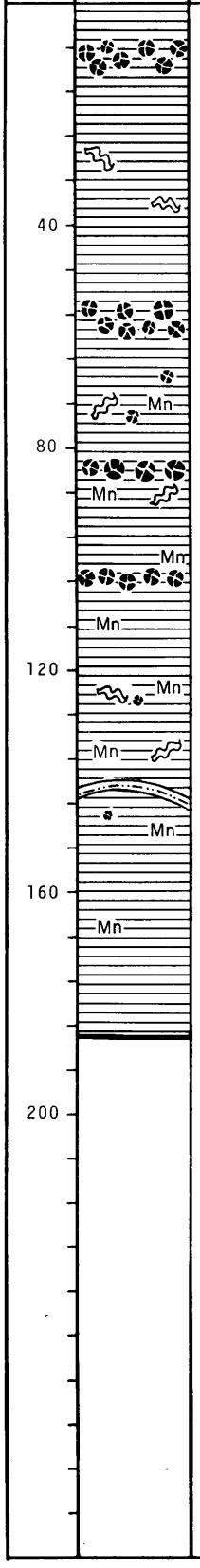
105-500 cm: Muddy sand, light olive gray (5Y 5/2), changing to olive gray (5Y 4/1) at 400 cm, sand becoming coarser with depth; volcanic ash common throughout; micro-manganese nodules sparsely scattered between 105-390 cm; sedimentary clasts between 182-185 cm (24 mm) and 177-182 cm (34 mm), composed of mud, olive gray (5Y 3/2), soft; 42 mm sedimentary clast between 274-279 cm, composed of clay, light olive gray (5Y 5/2), contains micro-manganese nodules, soft; slightly washed along the sides between 280-300 cm.

smear slides:	(sed. clast) 183 cm	187 cm	(sed. clast) 277 cm	312 cm	433 cm	495 cm
Quartz	30	74	35	75	77	74
Feldspar	1	2	1	1	2	2
Mica	<<1	<1	<<1	<1	<1	<1
Heavy minerals	3	7	2	5	5	6
Clay	62	15	60	18	12	14
Volcanic glass	4	2	1	1	2	2
Glauconite	-	<<1	-	<<1	<<1	-
Micro-Mn nodules	-	<1	1	<1	<1	<1
Carbonate unspecified	-	-	-	<<1	2	2
Foraminifera	-	-	-	-	<1	<1

Bottom topography: abyssal plain.

Logged by: Watkins, Kaharoeddin, Redmond, Goldstein, Graves

ISLAS ORCADAS PC 1578-47



LATITUDE: 63°09.2′ S CORR. DEPTH: 4890 M, 2674 FM

LONGITUDE: 20°08.9′ W CORE LENGTH: 186 CM

LITHOLOGIC DESCRIPTION

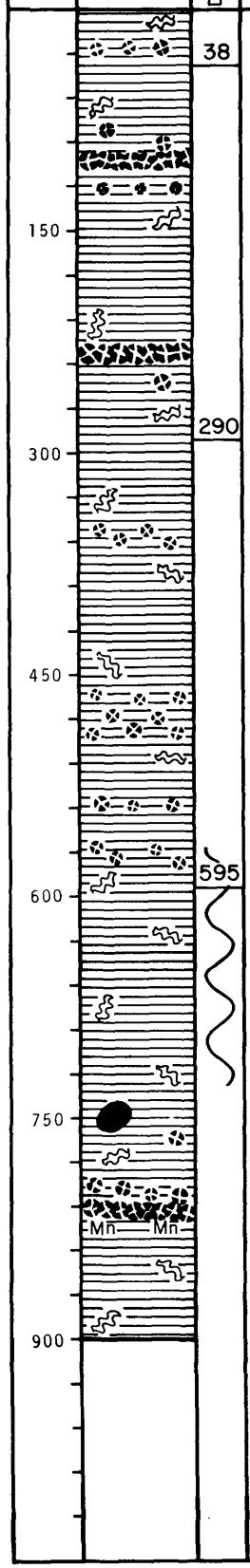
0-186 cm: Pelagic clay, light olive gray (5Y 5/2), gradationally changing to olive gray (5Y 4/1) at 18 cm, abruptly changing to light olive gray (5Y 5/2) at 43 cm; micro-manganese nodules, concentrated in patches up to 2 mm, sparsely scattered between 0-42 cm, common between 71-168 cm; zones of accumulation of abundant sedimentary clasts, composed of clay, light olive gray (5Y 5/2), moderately compacted, between 7-13 cm (up to 2 mm) and 53-58 cm (up to 5 mm); zones of accumulation of abundant sedimentary clasts, composed of clay, light olive brown (5Y 5/6), highly compacted, between 82-84 cm (up to 8 mm) and 102-105 cm (up to 15 mm); sedimentary clasts, clay, light olive brown (5Y 5/6), slightly compacted, between 66-67 cm (10 mm), 74-75 cm (8 mm), and sparsely scattered between 122-148 cm (up to 2 mm); 1 cm layer between 141-145 cm, composed of mud, olive gray (5Y 4/1), convexing upward, moderately compacted; moderately bioturbated between 24-41 cm, 70-78 cm, 85-92 cm and 120-139 cm; slightly washed along the side between 0-10 cm and 42-49 cm.

smear slides:	35 cm	47 cm	104 cm	(layer) 142 cm	147 cm
Quartz	5	4	4	25	5
Feldspar	<1	1	3	4	2
Mica	<1	2	<1	1	-
Heavy minerals	2	4	2	5	4
Clay	89	88	89	62	85
Volcanic glass	4	1	2	3	4

Bottom topography: abyssal plain.

Logged by: Bergen, Graves, Eggers

ISLAS ORCADAS PC 1578-47A



LATITUDE: 62°59.5' S WATER DEPTH: 4855 M, 2655 FM

LONGITUDE: 19°46.8' W CORE LENGTH: 900 CM

LITHOLOGIC DESCRIPTION

0-900 cm: Pelagic clay, light olive gray (5Y 5/2); slightly stained with manganese oxides; micro-manganese nodules sparsely scattered between 252-900 cm; manganese oxides, concentrated in irregular patches up to 20 mm, sparsely scattered between 813-900 cm.

Laminae and Layers: 6 mm lamina between 811-812 cm composed of clay, grayish black (N2), highly stained with manganese oxides; 3 cm layer between 808-811 cm, consisting primarily of sedimentary clasts up to 20 mm, composed of clay, moderate brown (5YR 4/4), highly compacted; layers consisting primarily of sedimentary clasts up to 10 mm between 106-109 cm, and up to 20 mm between 227-234 cm, composed of clay, light olive gray (5Y 5/2), moderately to highly compacted.

Inclusions: sedimentary clasts up to 20 mm abundant between 801-808 cm, composed of clay, moderate brown (5YR 4/4), highly compacted; sedimentary clasts up to 2 mm common between 120-124 cm, 344-361 cm, 478-490 cm and 534-540 cm, up to 7 mm between 23-25 cm, and up to 10 mm between 465-478 cm and 567-577 cm, composed of clay, light olive gray (5Y 5/2), slightly to moderately compacted; sedimentary clasts between 77-79 cm (14 mm), 81-82 cm (7 mm), 91-92 cm (9 mm), 242-243 cm (7 mm) and 758-760 (15 mm), composed of clay, light olive gray (5Y 5/2); 55 mm angular pebble between 746-752 cm.

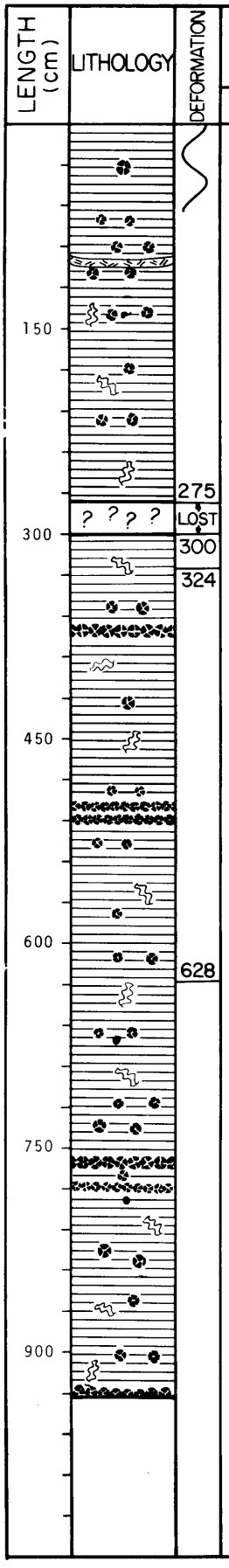
Bioturbations and Disturbance: moderately bioturbated throughout; slightly disturbed (washed) between 577-728 cm.

smear slides:	33 cm	154 cm	356 cm	630 cm
Quartz	2	4	10	3
Feldspar	<1	<1	1	1
Heavy minerals	<1	1	3	2
Clay	96	93	84	91
Volcanic glass	2	1	2	3
Micro-Mn nodules	-	1	-	-

Bottom topography: abyssal plain.

Logged by: Eggers, Graves, Bergen

ISLAS ORCADAS PC 1578-48



LATITUDE: 61°59.7' S CORR. DEPTH: 4890 M, 2674 FM

LONGITUDE: 20°00.3' W CORE LENGTH: 933 CM

LITHOLOGIC DESCRIPTION

NOTE: Section 2 of this core, approximately 25 cm in length (deck-log measurement), was not received by FSU. The missing core section is presumed to be of the same lithology as that of the overlying and underlying sections (pelagic clay).

0-933 cm: Pelagic clay, light olive gray (5Y 5/2); slightly stained with manganese oxides throughout; micro-manganese nodules sparsely scattered between 565-933 cm.

Layers: 6 cm layer between 98-104 cm, composed of ash-bearing clay, olive gray (5Y 3/2), bottom contact of layer is sharp, convexing slightly upward; 9 cm layer between 366-375 cm, consisting primarily of sedimentary clasts up to 26 mm, composed of ash-bearing clay, olive gray (5Y 3/2), partially indurated; 2 cm layer between 501-503 cm, consisting primarily of sedimentary clasts up to 10 mm, composed of ash-bearing clay, light brown (5YR 5/6), partially indurated; layers between 507-510 cm and 927-932 cm, consisting primarily of sedimentary clasts up to 24 mm, composed of clay, light olive gray (5Y 5/2), partially indurated; layers between 756-762 cm and 776-779 cm, consisting primarily of sedimentary clasts up to 15 mm, composed of clay, moderate yellowish brown (10YR 5/4), highly compacted to partially indurated.

Inclusions: sedimentary clasts up to 10 mm common between 104-108 cm, composed of ash-bearing clay, olive gray (5Y 3/2), highly compacted; sedimentary clasts up to 15 mm, median diameter 8 mm, composed of clay, light olive gray (5Y 5/2), moderately to highly compacted, common to abundant between 70-75 cm, 86-98 cm, 137-139 cm, 216-223 cm, 349-354 cm, 485-497 cm, 523-526 cm, 610-614 cm, 662-664 cm, 714-720 cm, 733-735 cm, 771-776 cm, 822-835 cm, and 903-906 cm; 2 cm sedimentary clast between 578-580 cm, composed of clay, moderate yellowish brown (10YR 5/4), highly indurated, fragmented; sedimentary clasts up to 15 mm, average size 8 mm, sparsely scattered throughout, composed of clay, light olive gray (5Y 5/2), soft to highly compacted; 3 mm manganese oxide-encrusted pebble between 671-672 cm; 4 mm subrounded pebble between 789-790 cm.

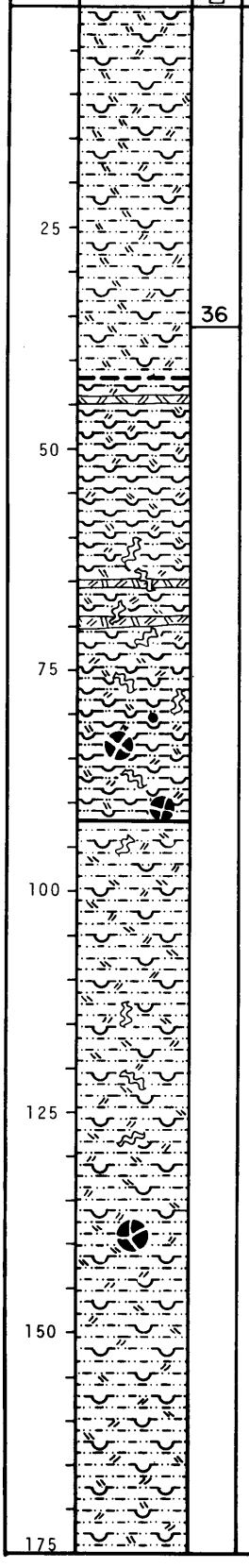
Bioturbations and Disturbance: moderately bioturbated between 130-933 cm; slightly disturbed (washed) between 0-65 cm; slightly washed along the side between 388-445 cm.

smear slides:	13 cm	(layer) 103 cm	222 cm	648 cm	804 cm
Quartz	5	3	5	4	6
Feldspar	1	1	2	<1	1
Heavy minerals	1	3	3	1	2
Clay	89	76	87	93	89
Volcanic glass	3	15	3	2	2
Glauconite	-	<1	-	-	-
Micro-Mn nodules	-	-	<1	-	-
Diatoms	1	2	<1	-	-
Radiolarians	<<1	<1	-	-	-
Sponge spicules	<<1	-	<<1	-	-

Bottom topography: abyssal plain, just north of a small rise.

Logged by: Eggers, Graves, Bergen

ISLAS ORCADAS PC 1578-49



LATITUDE: 61°05.6' S CORR. DEPTH: 4718 M, 2580 FM

LONGITUDE: 19°51.9' W CORE LENGTH: 940 CM

LITHOLOGIC DESCRIPTION

0-42 cm: Ash-bearing, diatomaceous mud, dark yellowish brown (10YR 4/2); diatom content decreases with depth between 0-30 cm, then increases with depth between 30-35 cm; gradational contact.

smear slide:	30 cm
Quartz	11
Feldspar	2
Heavy minerals	2
Clay	36
Volcanic glass	15
Diatoms	32
Radiolarians	2
Sponge spicules	<1
Silicoflagellates	<<1
Ebridians	<<1

42-92 cm: Ash-bearing, muddy, diatomaceous ooze, dark yellowish brown (10YR 4/2), abruptly changing to light olive gray (5Y 5/2) at 85 cm; zone of lower volcanic ash content between 85-92 cm, 0.8 cm lamina of volcanic ash between 44-45 cm; bioturbated laminae of volcanic ash between 65-66 cm (0.9 cm) and 68-70 cm (1.3 cm); sedimentary clasts between 82-85 cm (30 mm) and 89-92 cm (30 mm) composed of diatomaceous ooze, yellowish gray (5Y 7/2), soft; 4 mm pebble between 79-80 cm; 7 mm sand-tube, probably an indurated mold of a burrow, between 69-70 cm; highly bioturbated between 60-80 cm, bioturbations filled with volcanic ash; moderately bioturbated between 80-88 cm; sharp contact.

smear slides:	52 cm	(zone) 89 cm
Quartz	12	10
Feldspar	1	1
Mica	1	1
Heavy minerals	1	1
Clay	26	30
Volcanic glass	16	10
Diatoms	40	46
Radiolarians	2	1
Sponge spicules	1	<1
Silicoflagellates	<<1	<<1
Ebridians	<<1	-

92-232 cm: Ash-bearing, diatomaceous mud, dark yellowish brown (10YR 4/2); increasing diatom content with depth between 110-170 cm and 200-232 cm; patches up to 15 mm, containing concentration of volcanic ash, abundant between 110-125 cm, common between 160-180 cm; laminae of diatomaceous ooze between 228-231 cm; 40 mm sedimentary clast between 137-141 cm composed of muddy, diatomaceous ooze, olive gray (5Y 4/1), soft; moderately bioturbated between 92-95 cm and 110-130 cm; sharp, inclined contact.

smear slides:	132 cm	195 cm
Quartz	11	10
Feldspar	1	1
Heavy minerals	1	1
Clay	34	32
Volcanic glass	15	15
Diatoms	35	38
Radiolarians	3	3
Sponge spicules	<<1	<1
Silicoflagellates	<<1	<<1
Ebridians	<<1	<<1

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Logged by: Goldstein, Kaharoeddin, Socci, Watkins

ISLAS ORCADAS PC 1578-49

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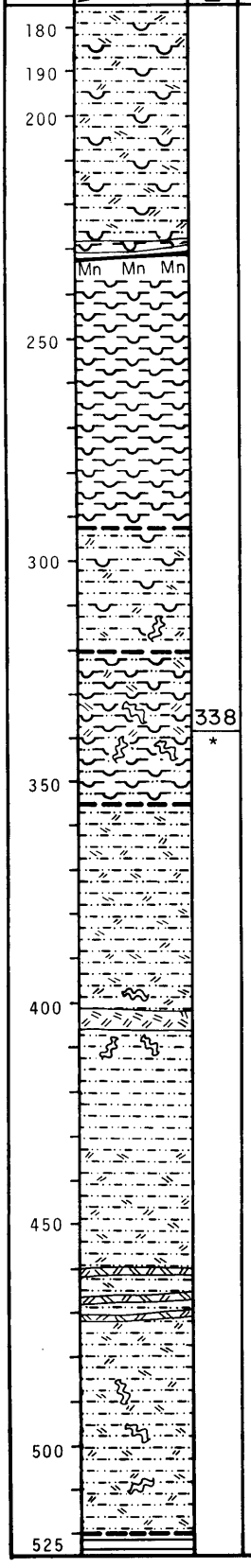

LATITUDE: 61°05.6′ S CORR. DEPTH: 4718 M, 2580 FM

LONGITUDE: 19°51.9′ W CORE LENGTH: 940 CM

LITHOLOGIC DESCRIPTION

232-292 cm: Diatomaceous ooze, yellowish gray (5Y 7/2); mud content increases with depth between 283-292 cm; inclined layer of sediment highly stained with ferro-manganese oxide between 233-236 cm; gradational contact.

smear slide:	273 cm		
Quartz	<1	Rock fragments	<<1
Feldspar	1	Diatoms	99
Clay	<1	Radiolarians	<<1
Volcanic glass	<<1	Silicoflagellates	<1

292-320 cm: Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash common throughout; slightly bioturbated between 313-320 cm; gradational contact.

smear slide:	297 cm		
Quartz	8	Rock fragments	<<1
Feldspar	<1	Micro-Mn nodules	<<1
Heavy minerals	<<1	Diatoms	33
Clay	57	Radiolarians	<1
Volcanic glass	2	Sponge spicules	<<1

320-355 cm: Muddy, diatomaceous ooze, light olive gray (5Y 5/2); diatom content decreases with depth; volcanic ash abundant between 340-345 cm, common between 320-338 cm; moderately bioturbated between 340-345 cm, bioturbations being filled with volcanic ash; slightly bioturbated between 336-338 cm; gradational contact. NOTE: smear slide is taken from a zone of higher ash content.

smear slide:	330 cm		
Quartz	5	Micro-Mn nodules	<<1
Feldspar	1	Diatoms	59
Heavy minerals	1	Radiolarians	3
Clay	15	Sponge spicules	<<1
Volcanic glass	16	Ebridians	<<1

355-520 cm: Mud, light olive gray (5Y 5/2); diatom content increases with depth between 385-402 cm; volcanic ash abundant between 430-520 cm, common to abundant between 390-402 cm, and common between 355-390 cm; layer of volcanic ash between 402-406 cm; laminae of volcanic ash abundant between 460-472 cm; zones of increased diatom content between 440-455 cm and 490-520 cm; 1 cm stringer of micro-manganese nodules between 487-488 cm; moderately bioturbated between 406-412 cm, bioturbations being filled with volcanic ash; slightly bioturbated between 395-402 cm and 485-513 cm; gradational contact.

smear slides:	425 cm	(zone) 490 cm
Quartz	6	12
Feldspar	1	1
Mica	<1	<1
Heavy minerals	2	2
Clay	77	49
Volcanic glass	7	6
Micro-Mn nodules	1	<1
Foraminifera	-	<<1
Diatoms	6	28
Radiolarians	<1	2
Sponge spicules	<<1	<1
Ebridians	<<1	-

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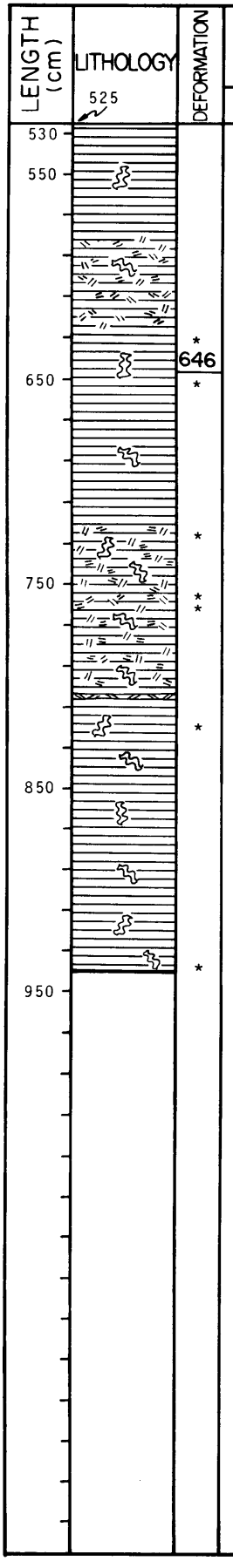
Logged by: Goldstein, Kaharoeddin, Socci, Watkins

ISLAS ORCADAS PC 1578-49



LATITUDE: 61°05.6′ S CORR. DEPTH: 4718 M, 2580 FM

LONGITUDE: 19°51.9′ W CORE LENGTH: 940 CM

LITHOLOGIC DESCRIPTION

520-940 cm: Pelagic clay, dark yellowish brown (10YR 4/2); volcanic ash abundant between 580-626 cm and 726-800 cm; volcanic ash sparsely scattered between 520-580 cm and 626-726 cm; micro-manganese nodules sparsely scattered throughout, often concentrated in stringers; layer of volcanic ash between 804-805 cm; moderately bioturbated between 726-750 cm and 790-939 cm; slightly bioturbated between 550-726 cm and 750-790 cm.

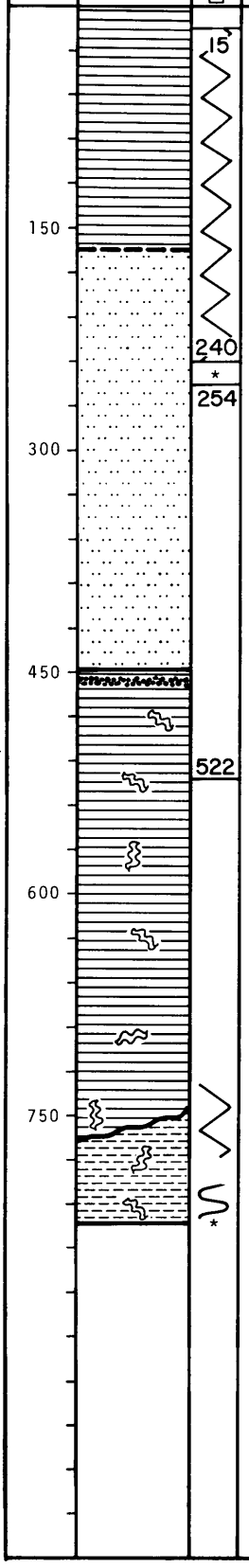
smear slides:	555 cm	699 cm	905 cm
Quartz	7	6	16
Feldspar	2	1	1
Mica	-	<<1	<1
Heavy minerals	1	1	2
Clay	81	82	71
Volcanic glass	7	8	7
Micro-Mn nodules	-	<<1	<1
Diatoms	1	2	3
Radiolarians	<1	<<1	<<1
Sponge spicules	1	<<1	<<1
Silicoflagellates	<<1	<<1	<<1
Ebridians	-	-	<<1

Bottom topography: irregular bathymetry; coring site between two seamounts.

NOTE: Sediment between 338-340 cm, 643-648 cm, 726-728 cm, 756-762 cm, 818-821 cm, and 939-940 cm is bagged.

Logged by: Goldstein, Kaharoeddin, Socci, Watkins

ISLAS ORCADAS PC 1578-50



LATITUDE: 64°57.5′ S CORR. DEPTH: 4852 M, 2653 FM

LONGITUDE: 24°21.0′ W CORE LENGTH: 824 CM

LITHOLOGIC DESCRIPTION

0-165 cm: Pelagic clay, light olive gray (5Y 5/2); manganese oxide staining sparsely scattered throughout; sand content increases with depth between 127-165 cm; highly disturbed between 15-155 cm, probably due to liner implosion between 100-122 cm; moderately disturbed between 155-165 cm; gradational contact.

smear slides:	30 cm	162 cm
Quartz	20	40
Feldspar	1	1
Mica	-	<<1
Heavy minerals	4	4
Clay	75	55
Volcanic glass	<1	<1
Micro-Mn nodules	-	<1

165-449 cm: Muddy sand, olive gray (5Y 4/1); sand size particles grade into very fine pebble size between 386-391 cm, 406-409 cm, 426-429 cm and 438-449 cm; moderately disturbed between 165-240 cm; slightly washed along the side between 254-449 cm; sharp contact.

smear slides:	210 cm	358 cm	427 cm
Quartz	83	74	83
Feldspar	1	2	1
Mica	<1	<1	<1
Heavy minerals	5	6	5
Clay	10	15	10
Volcanic glass	1	3	1
Rock fragments	-	-	<1
Glauconite	<<1	-	<<1
Micro-Mn nodules	<<1	-	-

449-756 cm: Pelagic clay, olive gray (5Y 4/1); higher silt content between 640-705 cm; micro-manganese nodules sparsely scattered between 670-756 cm, abundant as in-filling of bioturbations; layer of very fine to fine pebbles between 453-458 cm, and of a composition which includes quartz, limestone, and volcanic rock fragments; moderately bioturbated between 463-488 cm and 560-682 cm; slightly bioturbated between 515-560 cm and 680-756 cm; highly disturbed between 730-756 cm; liner imploded between 700-760 cm; sharp, inclined, irregular contact.

smear slides:	471 cm	690 cm
Quartz	19	74
Feldspar	1	1
Mica	<<1	<1
Heavy minerals	4	4
Clay	73	20
Volcanic glass	3	1
Glauconite	-	<<1
Micro-Mn nodules	-	<<1

756-824 cm: Silt, olive gray (5Y 4/1); micro-manganese nodules sparsely scattered between 756-824 cm, abundant as in-filling of bioturbations; slightly bioturbated throughout; moderately disturbed between 756-776 cm; slightly disturbed between 795-821 cm.

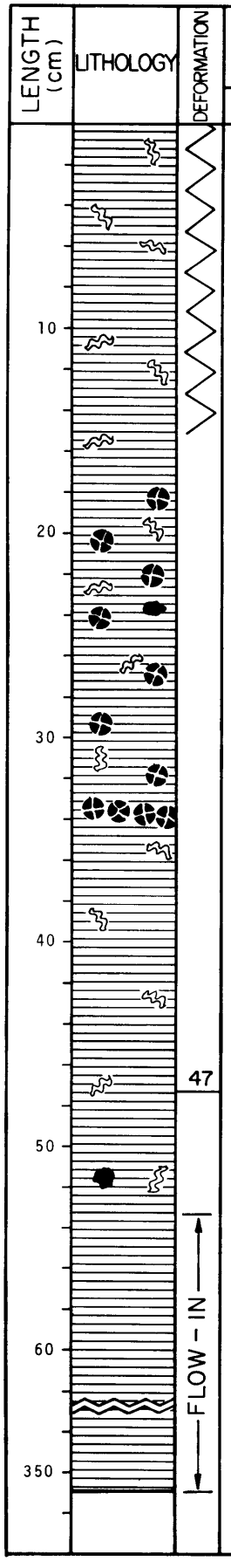
smear slide:	800 cm
Quartz	70
Feldspar	2
Mica	1
Heavy minerals	5
Clay	21
Volcanic glass	1
Glauconite	<<1
Micro-Mn nodules	<1

Bottom topography: abyssal plain.

*NOTE: Sediment between 0-15 cm, 240-254 cm and 821-824 cm is bagged.

Logged by: Watkins, Redmond, Goldstein, Kaharoeddin

ISLAS ORCADAS PC 1578-52



LATITUDE: 66°16.0′ S CORR. DEPTH: 4649 M, 2542 FM

LONGITUDE: 33°04.1′ W CORE LENGTH: 351 CM

LITHOLOGIC DESCRIPTION

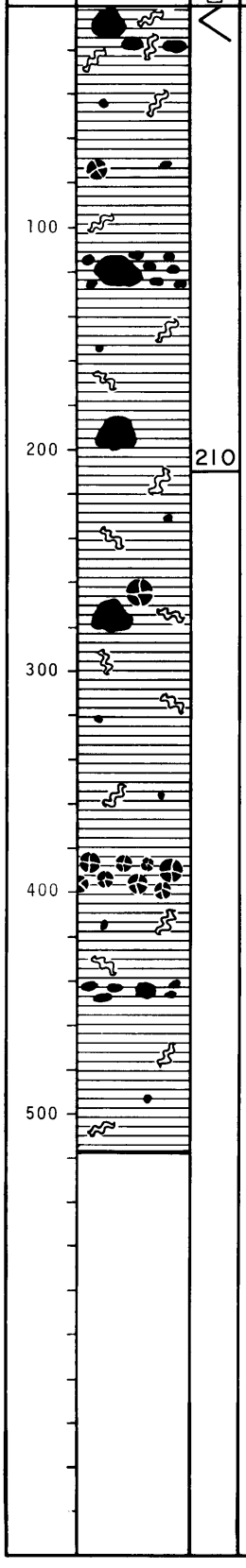
0-351 cm: Pelagic clay, yellowish gray (5Y 7/2); micro-manganese nodules sparsely scattered throughout; sedimentary clasts up to 10 mm, composed of silt, yellowish gray (5Y 7/2), highly compacted, abundant between 33-34 cm, and common between 17-33 cm; manganese-encrusted pebbles between 23-24 cm (6 mm) and 51-52 cm (10 mm); highly bioturbated between 0-53 cm; highly disturbed between 0-6 cm; moderately disturbed (washed) between 6-15 cm; flow-in between 53-351 cm.

smear slides:	1 cm	(sedimentary clast) 33 cm	43 cm
Quartz	9	82	12
Feldspar	1	1	<1
Mica	-	2	<1
Heavy minerals	3	12	4
Clay	85	<1	82
Volcanic glass	2	<1	2
Rock fragments	-	3	-
Sponge spicules	<<1	-	<<1

Bottom topography: abyssal plain.

Logged by: Eggers, Graves

ISLAS ORCADAS PC 1578-55



LATITUDE: 64°02.8′ S CORR. DEPTH: 4353 M, 2380 FM

LONGITUDE: 36°58.0′ W CORE LENGTH: 515 CM

LITHOLOGIC DESCRIPTION

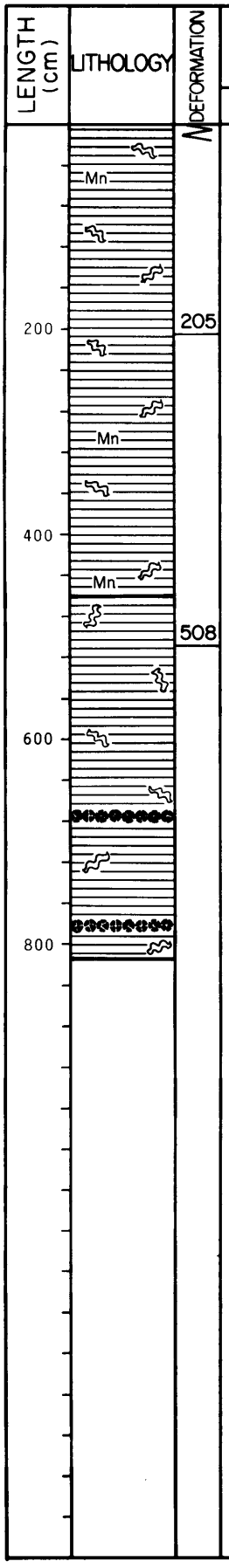
0-515 cm: Pelagic clay, light olive gray (5Y 5/2), abruptly changing at 21 cm to yellowish gray (5Y 7/2); micro-manganese nodules sparsely scattered throughout; zone of higher clay content between 0-57 cm; 1 cm layer between 107-108 cm, rich in coarse sand; sedimentary clasts up to 10 mm abundant between 382-400 cm, composed of clay, dusky yellow (5Y 6/4) slightly to moderately compacted; sedimentary clasts between 70-71 cm (9 mm) and 266-268 cm (14 mm) composed of clay, moderate yellowish brown (10YR 5/4), slightly compacted; 15 mm conglomerate between 441-443 cm, cemented and encrusted with manganese oxides; pebbles between 4-9 cm (33 mm), 16-18 cm (11 mm and 16 mm), 116-121 cm (49 mm), 186-191 cm (45 mm) and 269-273 cm (39 mm), subangular to subrounded, coated with manganese oxides; pebbles up to 10 mm abundant between 116-122 cm and 442-446 cm, coated with manganese oxides; pebbles up to 5 mm sparsely scattered throughout, coated with manganese oxides; highly bioturbated between 0-30 cm; moderately bioturbated between 121-515 cm; slightly bioturbated between 30-121 cm; moderately disturbed (washed) between 0-14 cm.

smear slides:	10 cm	148 cm	225 cm	428 cm	509 cm
Quartz	11	23	24	19	27
Feldspar	1	2	1	1	1
Mica	-	<<1	1	<1	<1
Heavy minerals	2	3	2	2	4
Clay	85	72	72	77	67
Volcanic glass	<<1	<1	<1	<1	1
Micro-Mn nodules	1	<1	<1	1	<1

Bottom topography: fairly flat.

Logged by: Eggers, Bergen

ISLAS ORCADAS PC 1578-56



LATITUDE: 63°05.8′ S CORR. DEPTH: 4512 M, 2467 FM

LONGITUDE: 38°27.6′ W CORE LENGTH: 814 CM

LITHOLOGIC DESCRIPTION

0-460 cm: Pelagic clay, light olive gray (5Y 5/2); highly stained with manganese oxides between 52-60 cm; zone of abundant micro-manganese nodules between 301-314 cm and 442-447 cm; laminae containing abundant micro-manganese nodules between 162-164 cm, 185-187 cm, 198-199 cm, 289-290 cm, 335-337 cm and 454-455 cm; unit is moderately bioturbated; highly disturbed between 1-4 cm due to rusting piece of metallic iron emplaced accidently during core preparation aboard ship; moderately disturbed (washed) between 0-13 cm; slightly washed along the side between 84-99 cm; sharp contact.

smear slides:	14 cm	144 cm	327 cm	431 cm
Quartz	30	24	38	31
Feldspar	1	1	1	2
Mica	<1	<<1	<<1	<1
Heavy minerals	2	2	3	4
Clay	64	71	56	62
Volcanic glass	3	1	2	1
Glauconite	-	-	<<1	<<1
Micro-Mn nodules	<1	1	-	-
Calcareous nannos	<<1	-	-	-
Diatoms	<1	<<1	<<1	<<1
Radiolarians	-	-	<<1	<<1
Sponge spicules	<<1	-	<1	<<1

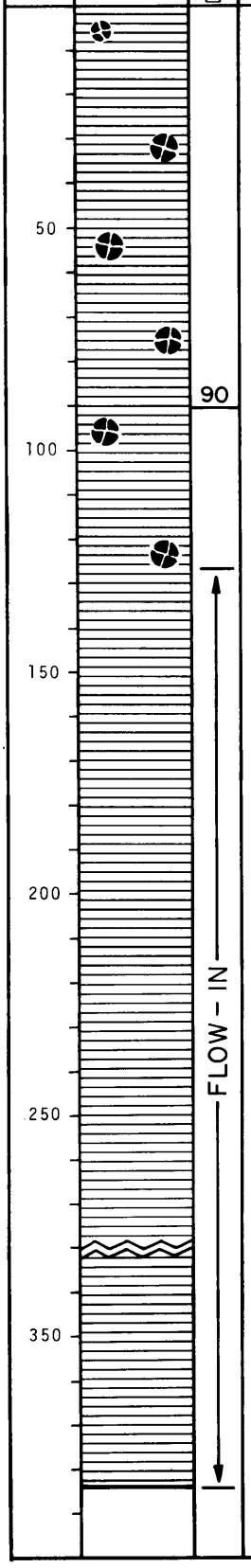
460-814 cm: Pelagic clay, olive gray (5Y 3/2), gradationally changing to light olive gray (5Y 5/2) between 615-677 cm; layers between 674-675 cm and 780-781 cm composed of sedimentary clasts (up to 5 mm) consisting of clay, light olive brown (5Y 5/6), highly compacted; moderately bioturbated between 461-787 cm and 800-814 cm.

smear slides:	466 cm	(layer) 674 cm	793 cm
Quartz	28	14	24
Feldspar	2	1	2
Mica	<<1	-	2
Heavy minerals	2	2	2
Clay	65	82	67
Volcanic glass	3	1	3
Sponge spicules	<<1	-	-

Bottom topography: rolling, abyssal hills.

Logged by: Eggers, Bergen

ISLAS ORCADAS PC 1578-59



LATITUDE: 60°33.6′ S CORR. DEPTH: 2707 M, 1480 FM

LONGITUDE: 40°13.2′ W CORE LENGTH: 385 CM

LITHOLOGIC DESCRIPTION

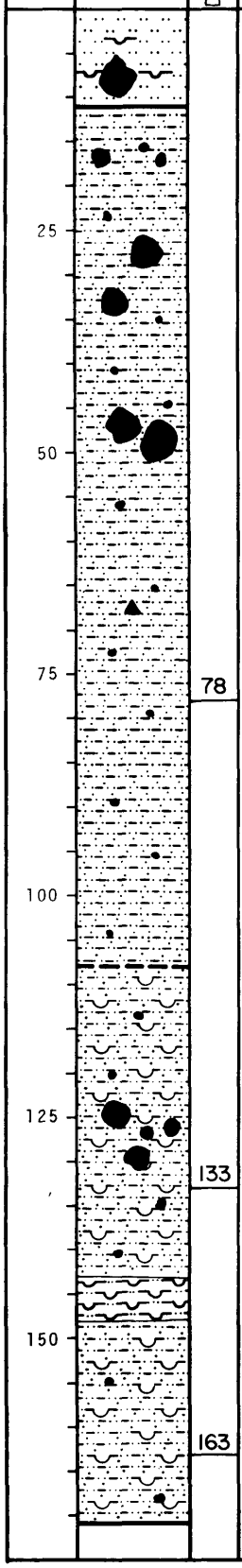
0-385 cm: Pelagic clay, olive gray (5Y 3/2), abruptly changing between 19-25 cm and 30-35 cm to moderate olive brown (5Y 4/4); sedimentary clasts up to 15 mm common between 0-127 cm, composed of clay, olive gray (5Y 3/2), compacted; flow-in between 127-385 cm.

smear slides:	(sedimentary clast) 6 cm	28 cm	118 cm
Quartz	17	17	22
Feldspar	3	1	1
Mica	<1	<1	<1
Heavy minerals	4	2	1
Clay	75	76	67
Volcanic glass	1	-	2
Glauconite	-	<1	-
Micro-Mn nodules	<1	3	4
Carbonate unspecified	-	-	<1
Foraminifera	-	<<1	-
Calcareous nannos	-	1	3
Sponge spicules	<1	-	-

Bottom topography: on the northern flank of a trench.

Logged by: Graves, Bergen

ISLAS ORCADAS PC 1578-61



LATITUDE: 58°00.1' S CORR. DEPTH: 3438 M, 1880 FM

LONGITUDE: 41°00.2' W CORE LENGTH: 171 CM

LITHOLOGIC DESCRIPTION

0-11 cm: Diatomaceous, muddy sand, light olive gray (5Y 5/2); 40 mm angular pebble between 6-10 cm; sharp contact.

smear slide:	5 cm
Quartz	58
Feldspar	2
Mica	<1
Heavy minerals	4
Clay	10
Volcanic glass	4
Glauconite	<1
Diatoms	20
Radiolarians	2
Sponge spicules	<1

11-108 cm: Sandy mud, dusky yellow (5Y 6/4), gradationally changing at 50 cm to yellowish gray (5Y 7/2); zone of higher sand content between 40-46 cm; angular pebbles between 16-18 cm (15 mm) and 45-49 cm (40 mm); subrounded pebbles between 15-16 cm (10 mm), 17-18 cm (10 mm) and 26-30 cm (40 mm); rounded pebbles between 31-35 cm (35 mm) and 46-52 cm (60 mm); 10 mm pumice between 67-68 cm; pebbles up to 10 mm common between 18-108 cm; gradational contact. NOTE: smear slide at 37 cm is biased toward diatoms and clay.

smear slides:	37 cm	74 cm
Quartz	31	48
Feldspar	1	2
Mica	<1	<1
Heavy minerals	1	3
Clay	35	43
Volcanic glass	3	1
Diatoms	25	3
Radiolarians	3	<1
Sponge spicules	1	<1
Silicoflagellates	<<1	-

108-171 cm: Diatomaceous, sandy mud, dusky yellow (5Y 6/4); sand content deceases with depth; layer of muddy, diatomaceous ooze between 143-148 cm; pebbles between 123-126 cm (30 mm) and 128-131 cm (30 mm); 10 mm pebble stained with manganese oxides between 126-127 cm; 15 mm pebble between 125-127 cm encrusted with micro-manganese nodules, pebbles up to 20 mm common between 108-131 cm; pebbles up to 10 mm sparsely scattered between 131-171 cm.

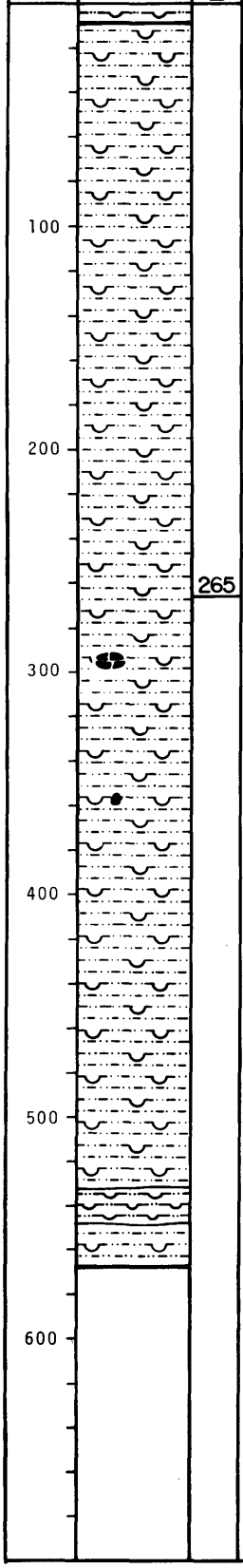
smear slides:	135 cm	167 cm
Quartz	45	40
Feldspar	2	2
Mica	<1	<1
Heavy minerals	3	4
Clay	21	23
Volcanic glass	2	1
Diatoms	25	27
Radiolarians	2	3
Sponge spicules	<1	<1
Silicoflagellates	<<1	<<1

Bottom topography: rugged bathymetry.

*NOTE: Approximately 0.5 cm of sediment from the core bottom are bagged.

Logged by: Eggers, Kaharoeddin, Graves

ISLAS ORCADAS PC 1578-62



LATITUDE: 57°00.1′ S CORR. DEPTH: 3420 M, 1870 FM

LONGITUDE: 41°01.1′ W CORE LENGTH: 568 CM

LITHOLOGIC DESCRIPTION

0-7 cm: Muddy, diatomaceous ooze, light olive gray (5Y 5/2); sharp contact.

smear slide:	4 cm
Quartz	9
Feldspar	1
Mica	<<1
Heavy minerals	1
Clay	27
Volcanic glass	<1
Glauconite	<<1
Diatoms	62
Radiolarians	<1
Sponge spicules	<<1
Silicoflagellates	<1

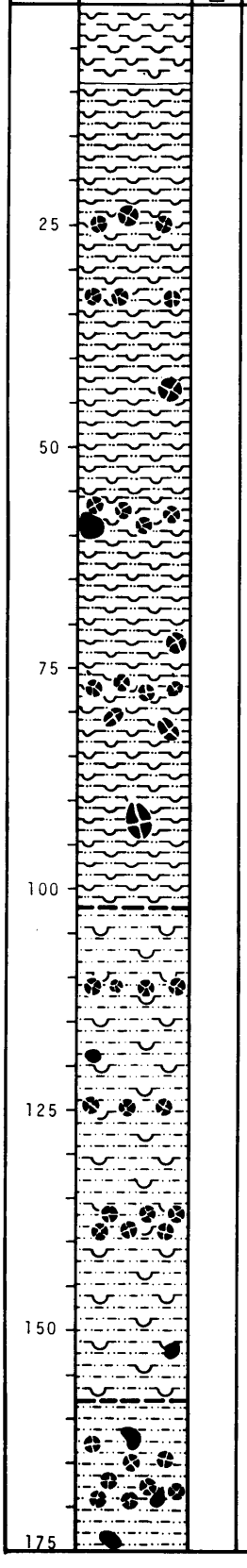
7-568 cm: Diatomaceous mud, grayish olive (10Y 4/2); zone of higher silt content between 231-248 cm; zone of higher diatom content between 300-340 cm; layer of muddy, diatomaceous ooze between 535-548 cm; 1 cm lamina composed primarily of silt between 434-435 cm; 30 mm angular sedimentary clast between 293-296 cm, composed of ash-bearing, muddy, diatomaceous ooze, olive black (5Y 2/1), soft; 20 mm pebble between 358-360 cm.

smear slides:	60 cm	160 cm	280 cm	400 cm
Quartz	35	25	38	22
Feldspar	1	4	1	1
Mica	<1	1	-	<<1
Heavy minerals	5	2	8	2
Clay	15	28	35	49
Volcanic glass	<1	<1	<1	1
Glauconite	-	-	-	<<1
Micro-Mn nodules	<1	-	<<1	-
Diatoms	44	40	18	25
Radiolarians	<1	<1	<1	<1
Sponge spicules	<1	<1	<<1	<<1
Silicoflagellates	<<1	<<1	<<1	<<1
Ebridians	-	<<1	-	-

Bottom topography: rolling, abyssal plains in the Scotia Sea.

Logged by: Watkins, Graves, Kaharoeddin

ISLAS ORCADAS PC 1578-63



LATITUDE: 56°01.7′ S CORR. DEPTH: 3091 M, 1690 FM

LONGITUDE: 41°09.7′ W CORE LENGTH: 497 CM

LITHOLOGIC DESCRIPTION

0-102 cm: Muddy, diatomaceous ooze, light olive gray (5Y 5/2); zone of higher sand content between 47-53 cm; abundant sedimentary clasts up to 5 mm, composed of muddy, diatomaceous ooze, light olive brown (5Y 5/6), highly compacted, between 23-26 cm, 55-59 cm, and 76-78 cm, and slightly compacted between 32-34 cm; layer of diatomaceous ooze between 0-9 cm, light olive gray (5Y 5/2); 21 mm sedimentary clast between 42-45 cm, composed of muddy, diatomaceous ooze, light olive gray (5Y 5/2); sedimentary clasts between 70-73 cm (22 mm), 80-82 cm (14 mm), 82-83 cm (10 mm), and 90-94 cm (32 mm), composed of muddy, diatomaceous ooze, light olive brown (5Y 5/6), highly compacted; 33 mm subrounded pebble between 57-61 cm; gradational contact.

smear slide:	57 cm
Quartz	15
Feldspar	1
Heavy minerals	1
Clay	27
Volcanic glass	1
Diatoms	53
Radiolarians	2
Sponge spicules	<1
Silicoflagellates	<<1

102-158 cm: Diatomaceous mud, light olive gray (5Y 5/2); sedimentary clasts up to 5 mm abundant between 111-112 cm, composed of diatomaceous mud, light olive gray (5Y 5/2); sedimentary clasts up to 5 mm abundant between 123-126 cm and 136-140 cm, composed of muddy, diatomaceous ooze, light olive brown (5Y 5/6), highly compacted; 10 mm subrounded pebble between 118-119 cm; 12 mm subangular pebble between 151-153 cm; gradational contact.

smear slide:	106 cm
Quartz	44
Feldspar	2
Mica	<1
Heavy minerals	8
Clay	24
Volcanic glass	2
Diatoms	15
Radiolarians	3
Sponge spicules	2
Silicoflagellates	<<1

158-208 cm: Mud, light olive gray (5Y 5/2); sedimentary clasts up to 3 mm abundant between 162-169 cm and 181-186 cm, composed of mud, light olive gray (5Y 5/2); sedimentary clasts up to 3 mm abundant between 197-200 cm, composed of muddy, diatomaceous ooze, light olive brown (5Y 5/6); 19 mm sedimentary clast between 204-206 cm, composed of muddy, diatomaceous ooze, light olive brown (5Y 5/6); 20 mm subrounded pebble between 161-164 cm; 13 mm rounded, ellipsoidal pebble between 167-170 cm; 18 mm subrounded pebble between 173-175 cm; gradational contact.

smear slide:	190 cm
Quartz	49
Feldspar	1
Heavy minerals	10
Clay	37
Volcanic glass	2
Diatoms	1
Radiolarians	<1
Sponge spicules	<1

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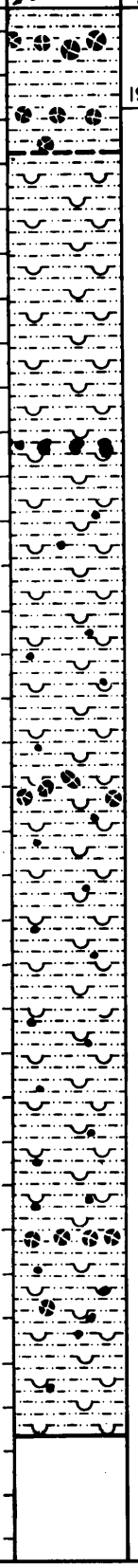
Logged by: Bergen, Graves, Eggers

ISLAS ORCADAS PC 1578-63

(SC)

LENGTH (cm) | LITHOLOGY | DEFORMATION



LATITUDE: 56°01.7′ S CORR. DEPTH: 3091 M, 1690 FM

LONGITUDE: 41°09.7′ W CORE LENGTH: 497 CM

LITHOLOGIC DESCRIPTION

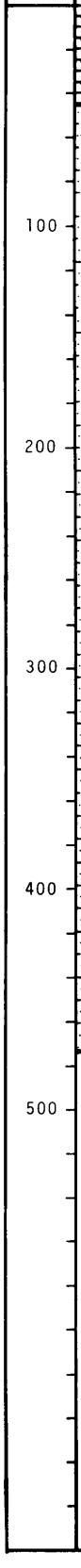
208-497 cm: Diatomaceous mud, color varies between grayish olive (10Y 4/2) and moderate olive brown (5Y 4/4); sedimentary clasts up to 6 mm common between 347-355 cm, abundant between 451-455 cm, clasts composed of diatomaceous mud, grayish olive (10Y 4/2); 20 mm sedimentary clast between 467-469 cm, composed of diatomaceous mud, grayish olive (10Y 4/2); four angular pebbles up to 18 mm between 272-275 cm; pebbles ranging from 10-23 mm sparsely scattered between 289-486 cm.

smear slides:	314 cm	455 cm
Quartz	28	32
Feldspar	1	1
Heavy minerals	5	4
Clay	24	35
Volcanic glass	-	1
Diatoms	40	23
Radiolarians	1	3
Sponge spicules	1	1
Silicoflagellates	<1	<<1

Bottom topography: rolling, abyssal hills in the Scotia Sea.

Logged by: Bergen, Graves, Eggers

ISLAS ORCADAS PC 1578-64



LATITUDE: 55°39.5′ S CORR. DEPTH: 3420 M, 1870 FM

LONGITUDE: 41°10.0′ W CORE LENGTH: 473 CM

LITHOLOGIC DESCRIPTION

0-44 cm: Muddy, diatomaceous ooze, light olive gray (5Y 5/2); slightly mottled with yellowish gray (5Y 7/2) between 0-8 cm and 20-28 cm; stringers with higher silt content between 9-12 cm; concentrations of volcanic ash in patches up to 3 mm sparsely scattered throughout; 25 mm pebble between 14-16 cm; gradational contact.

smear slides:	12 cm	25 cm
Quartz	15	18
Feldspar	1	2
Mica	<1	<1
Heavy minerals	2	3
Clay	25	10
Volcanic glass	1	-
Rock fragments	<1	1
Glauconite	-	<<1
Micro-Mn nodules	<<1	<1
Diatoms	53	63
Radiolarians	2	1
Sponge spicules	<1	<1
Silicoflagellates	1	2
Ebridians	<<1	-

44-473 cm: Diatomaceous mud, light olive gray (5Y 5/2); zone of higher silt content between 310-318 cm; micro-manganese nodules sparsely scattered throughout; concentrations of volcanic ash in patches up to 3 mm sparsely scattered throughout.

smear slides:	106 cm	192 cm	291 cm	314 cm	438 cm
Quartz	23	32	30	34	23
Feldspar	3	2	1	4	1
Mica	<1	<1	<1	-	<1
Heavy minerals	5	3	4	3	4
Clay	29	35	18	15	27
Volcanic glass	-	1	-	-	1
Glauconite	<1	-	-	<<1	<<1
Micro-Mn nodules	2	<1	3	3	2
Diatoms	37	27	43	40	40
Radiolarians	1	<1	1	1	2
Sponge spicules	<1	<1	<1	<1	<1
Silicoflagellates	-	-	<1	<1	<1

Bottom topography: rolling, abyssal hills.

*NOTE: Sediment between 0-2 cm, 461-467 cm and 467-473 cm is bagged.

Logged by: Graves, Eggers

ISLAS ORCADAS CRUISE 1578

DESCRIPTIONS OF TRIGGER CORES AND TRIGGER CORE BAG SAMPLES*

Duplicate trigger cores were recovered at 26 coring sites aboard this cruise, and have been designated as either (A) or (B). No letter designation was assigned in the event that only one core was recovered.

Accompanying many of the trigger core descriptions are a variety of explanatory notes concerning bagged or missing core intervals. Missing intervals are those which were not received by the Antarctic Research Facility, and can be attributed to the unprecedented (for the first, and only, time in the history of the ELTANIN/ISLAS ORCADAS program) removal ('divvying up') aboard ship of core-top sediments by non-FSU principal investigators.

Most of the bagged samples are either core-top or -bottom sediments. In some cases, penetration by the corer was greater than the length of the core liner, the result of which was the forcing-up of sediment (the core top) into the "bomb", or trigger weight assembly. In other cases, the liner was forced up into the "bomb", leaving a bottom portion of the sediment column encapsuled in the core barrel, but not within the plastic core liner. In either case, the sediment required bagging.

For the purpose of requesting samples from the trigger cores, it is advised that particular attention be given to these notes.

*Undescribed core cutter and/or catcher sediments are listed on page 137.

TC 1578-2

Latitude: 58°16.2'S
Longitude: 28°38.9'W
Water Depth: 3246 m
Core Length: 52 cm

0-26 cm: Muddy, diatomaceous ooze, moderate brown (5YR 3/4); highly stained with ferro-manganese oxides between 15-17 cm; moderately stained with ferro-manganese oxides between 0-15 cm and 17-26 cm; 1.5 cm layer of volcanic ash between 19-21 cm; several laminae, each <1 cm, highly stained with ferro-manganese oxides, between 2-5 cm; discontinuous stringers, highly stained with ferro-manganese oxides, between 23-24 cm and 25-26 cm; 5 mm sedimentary clasts, yellowish gray (5Y 7/2), composed of diatomaceous ooze, soft, between 14-16 cm and 24-25 cm; sediment slightly thinned between 2-9 cm; slightly washed along the side between 2-26 cm; sharp, inclined contact.

26-52 cm: Muddy, diatomaceous ooze, yellowish gray (5Y 7/2), abruptly changing to light olive gray (5Y 5/2) at 33 cm; mottled throughout; highly stained with ferro-manganese oxides between 36-47 cm; discontinuous stringers, highly stained with ferro-manganese oxides, between 28-29 cm; stringer of volcanic ash between 35-36 cm; 5 mm sedimentary clasts, yellowish gray (5Y 7/2), composed of diatomaceous ooze, soft, sparsely scattered throughout; slightly washed along the side between 26-27 cm.

smear slides:	10 cm	(layer) 20 cm	33 cm	50 cm
Quartz	20	36	6	7
Feldspar	2	3	1	1
Mica	<1	-	<1	-
Heavy minerals	1	23	3	1
Clay	10	2	18	25
Volcanic glass	4	35	7	3
Glauconite	-	<1	<1	-
Diatoms	63	1	65	63
Radiolarians	<1	-	<1	<1
Sponge spicules	<<1	-	<<1	-
Silicoflagellates	<1	-	<<1	<1
Ebridians	<<1	-	-	-

TC 1578-5

Latitude: 59°48.0'S
Longitude: 13°28.7'W
Water Depth: 3968 m
Core Length: 70 cm

0-1.5 cm: Core interval not received by FSU. NOTE: although the deck-log indicates that only one-half of the top 1.5 cm of the core was removed from the core liner aboard ship, the core appears to be missing the entire top 1.5 cm. The deck-log also notes that sediment from the top of the trigger core was recovered from inside the trigger weight assembly.

1.5-6 cm: Foraminiferal, muddy, diatomaceous ooze, dark yellowish brown (10YR 4/2); mottled throughout; foraminifera content increases with depth; volcanic ash sparsely scattered throughout; gradational contact.

6-13 cm: Marly, foraminiferal ooze, dark yellowish brown (10YR 4/2); mottled throughout; volcanic ash sparsely scattered throughout; laminae, very light gray(N8), with higher diatom content, between 11-12 cm (0.2 cm) and 12-13 cm (0.4 cm); gradational contact.

13-24 cm: Muddy, diatomaceous ooze, dark yellowish brown (10YR 4/2); mottled throughout; volcanic ash sparsely scattered throughout; 15 mm manganese oxide-coated, subangular gravel between 14-16 cm; gradational contact.

24-32 cm: Marly, foraminiferal ooze, dark yellowish brown (10YR 4/2); mottled throughout; volcanic ash sparsely scattered throughout; gradational contact.

32-70 cm: Pelagic clay, dark yellowish brown (10YR 4/2); mottled throughout; volcanic ash sparsely scattered throughout; irregular lenses (< 0.5 cm), very light gray (N8), with higher diatom content, sparsely scattered between 60-70 cm.

smear slides:	3 cm	7 cm	21 cm	25 cm	67 cm
Quartz	4	1	6	2	7
Feldspar	<1	<1	-	<1	2
Mica	<<1	<1	-	-	<<1
Heavy minerals	<1	1	1	1	1
Clay	28	57	32	45	67
Volcanic glass	2	3	5	5	8
Micro-Mn nodules	1	-	-	1	<<1
Carbonate unspecified	5	6	11	10	4
Foraminifera	20	30	5	30	1
Calcareous nannos	-	<<1	-	-	<<1
Diatoms	40	2	37	6	7
Radiolarians	<1	<1	3	-	3
Sponge spicules	<<1	-	-	-	<<1
Silicoflagellates	<1	-	<<1	-	<<1
Ebridians	-	-	<<1	-	-

TC 1578-6

Latitude: 59°29.2'S
Longitude: 09°51.2'W
Water Depth: 4283 m
Core Length: 74 cm

0-74 cm: Diatomaceous mud, dark yellowish brown (10YR 4/2); volcanic ash common between 37-40 cm and 66-67 cm; volcanic ash sparsely scattered between 3-37 cm, 40-66 cm, and 67-74 cm; layer with abundant, intermixed, yellowish gray (5Y 8/1) sediment with higher diatom content between 18-25 cm; 1 cm lens of volcanic ash between 7-8 cm. NOTE: core-top sediment contained in two bags (0-1 cm and 1-3 cm). Deck-log notes that this sediment was recovered from inside the trigger weight assembly. Thus, the top of the sediment column in the core liner has been assigned a depth of 3 cm.

smear slides:	15 cm	(layer) 23 cm	48 cm
Quartz	10	5	3
Feldspar	2	1	1
Heavy minerals	3	1	2
Clay	54	37	69
Volcanic glass	9	3	6
Glauconite	-	-	<<1
Micro-Mn nodules	-	-	<<1
Diatoms	20	48	17
Radiolarians	2	5	2
Sponge spicules	<<1	<<1	<<1
Silicoflagellates	-	<<1	-

TC 1578-7

Latitude: 60°00.4'S
Longitude: 06°45.5'W
Water Depth: 5214 m
Core Length: 25 cm

0-25 cm: Pelagic clay, dark yellowish brown (10YR 4/2); volcanic ash common between 6-10 cm and 16-19 cm; volcanic ash sparsely scattered between 0-6 cm, 10-16 cm, and 19-25 cm; slightly disturbed (washed) throughout.

smear slides:	4 cm	14 cm
Quartz	6	7
Feldspar	1	3
Heavy minerals	5	4
Clay	79	81
Volcanic glass	5	2
Micro-Mn nodules	<<1	<<1
Diatoms	4	3
Radiolarians	<1	<<1
Sponge spicules	<<1	<<1

TC 1578-8

Latitude: 60°33.3'S
Longitude: 03°38.5'W
Water Depth: 5130 m
Core Length: 69 cm

0-69 cm: Pelagic clay, dark yellowish brown (10YR 4/2); volcanic ash common between 12-16 cm and 61-62 cm; volcanic ash sparsely scattered between 2-12 cm, 16-61 cm, and 62-69 cm; slightly disturbed between 8-14 cm. NOTE: core-top sediment (0-2 cm) is bagged. Deck-log notes that this sediment was recovered from inside the trigger weight assembly. Thus, the top of the sediment column in the core liner has been assigned a depth of 2 cm.

smear slides:	13 cm	50 cm
Quartz	5	4
Feldspar	3	2
Mica	<<1	<<1
Heavy minerals	2	2
Clay	63	84
Volcanic glass	12	3
Diatoms	13	5
Radiolarians	2	-
Sponge spicules	-	<<1
Silicoflagellates	-	<<1
Ebridians	-	<<1

TC 1578-9

Latitude: 61°57.3'S
Longitude: 03°34.5'W
Water Depth: 5201 m
Core Length: 78 cm

0(?)-78 cm: Pelagic clay, dark yellowish brown (10YR 4/2); mottled between 71-74 cm; highly disturbed (washed) throughout. NOTE: a small (<1 cm) amount of sediment was recovered from inside the trigger weight assembly. This sediment is bagged. The deck-log states that an additional, undetermined amount of sediment was unable to be recovered from the trigger weight assembly; therefore, the top of the sediment column in the core liner may not be the true core top.

smear slides:	10 cm	72 cm
Quartz	8	13
Feldspar	1	3
Mica	<1	1
Heavy minerals	2	5
Clay	82	71
Volcanic glass	2	5
Diatoms	5	2
Radiolarians	<1	<1
Sponge spicules	<<1	<1
Silicoflagellates	<<1	-
Ebridians	<<1	-

TC 1578-11

Latitude: 64°58.7'S
Longitude: 07°27.1'W
Water Depth: 4987 m
Core Length: 56 cm

0(?)-56 cm: Mud, light olive gray (5Y 5/2); slightly disturbed (washed) throughout. NOTE: according to the deck-log, penetration of the trigger core was greater than the length of core liner, forcing the core-top sediment up into the trigger weight assembly, and that "most of this excess (approximately 10 cm)" was extracted and bagged aboard ship. The bag sample received, however, contains sediment equivalent to about 3 cm of core; thus, the top of the sediment column in the core liner is not the true core top, and may be as low as 10 cm.

smear slides:	15 cm	50 cm
Quartz	33	46
Feldspar	2	2
Mica	<1	<1
Heavy minerals	8	13
Clay	50	36
Volcanic glass	3	3
Diatoms	4	-
Radiolarians	<1	-
Sponge spicules	<1	<1
Ebridians	<<1	-

TC 1578-12

Latitude: 66°58.9'S
Longitude: 07°45.2'W
Water Depth: 4806 m
Core Length: 66 cm

0-66 cm: Mud, light olive gray (5Y 5/2); silt content varies irregularly throughout; moderately disturbed (washed) between 60-66 cm; slightly disturbed (washed) between 6-60 cm. NOTE: the top 6 cm of core sediment were bagged aboard ship, having been recovered from inside the trigger weight assembly. Thus, the top of the sediment column in the core liner has been assigned a depth of 6 cm.

smear slides:	15 cm	55 cm
Quartz	57	26
Feldspar	2	1
Mica	6	1
Heavy minerals	8	9
Clay	25	55
Volcanic glass	2	3
Glauconite	-	<1
Micro-Mn nodules	<<1	<1
Diatoms	-	5
Radiolarians	-	<1
Sponge spicules	<1	<1

TC 1578-14(A)

Latitude: 68°41.8'S
Longitude: 10°13.5'W
Water Depth: 4256 m
Core Length: 66 cm

0-66 cm: Pelagic clay, light olive gray (5Y 5/2); mottled between 25-51 cm; high silt content throughout; foraminifera content decreases with depth; 35 mm subangular manganese oxide-coated pebble between 18-22 cm; core thinned (washed) between 18-25 cm. NOTE: deck-log indicates that the trigger core liner was forced up into the trigger weight assembly, leaving the bottom 11 cm of core sediment in the core barrel below the core liner and above the core cutter, and with the core catcher at the top of this 11 cm sediment "plug". This sediment was placed in two bags aboard ship, and labeled "bottom 6 cm" (60-66 cm), and "bottom 6-11 cm" (55-60 cm).

smear slides:	10 cm	45 cm
Quartz	33	40
Feldspar	1	2
Mica	<1	1
Heavy minerals	9	11
Clay	47	43
Volcanic glass	2	3
Carbonate unspecified	3	-
Foraminifera	5	-
Diatoms	<1	-
Sponge spicules	<1	<<1

TC 1578-14(B)

Latitude: 68°41.8'S
Longitude: 10°13.5'W
Water Depth: 4256 m
Core Length: 50 cm

0-2 cm: Core interval not received by FSU (except for two pebbles put in bag aboard ship).

2-50 cm: Pelagic clay, light olive gray (5Y 5/2); zone of higher foraminifera content between 12-20 cm; mottled between 20-50 cm; high silt content throughout.

smear slides:	(zone) 15 cm	45 cm
Quartz	25	28
Feldspar	1	1
Mica	<1	1
Heavy minerals	9	8
Clay	41	60
Volcanic glass	2	2
Carbonate unspecified	8	-
Foraminifera	14	-
Diatoms	<1	-
Radiolarians	<<1	-
Sponge spicules	<<1	-

TC 1578-16

Latitude: 70°36.7'S
Longitude: 10°03.8'W
Water Depth: 366 m
Core Length: Bag

Bag sample (17 grams): Sandy mud, olive gray (5Y 3/2); rock fragments up to 23 mm abundant throughout. NOTE: bag sample represents total sediment recovery by the trigger core, except for a small amount recovered by the core cutter and core catcher (bagged separately).

smear slide:	bag
Quartz	42
Feldspar	2
Heavy minerals	4
Clay	33
Volcanic glass	2
Glauconite	2
Carbonate unspecified	4
Foraminifera	3
Diatoms	6
Radiolarians	<<1
Sponge spicules	2

TC 1578-19(A)

Latitude: 70°32.4'S
Longitude: 10°16.4'W
Water Depth: 1339 m
Core Length: 12 cm

0-12 cm: Mud, olive gray (5Y 4/1); volcanic ash sparsely scattered throughout.

smear slide:	6 cm
Quartz	25
Feldspar	1
Mica	<<1
Heavy minerals	10
Clay	52
Volcanic glass	3
Glauconite	<1
Diatoms	8
Radiolarians	<1
Sponge spicules	1
Silicoflagellates	<<1

TC 1578-19(B)

Latitude: 70°32.4'S
Longitude: 10°16.4'W
Water Depth: 1339 m
Core Length: 6 cm

0-6 cm: Mud, olive gray (5Y 4/1); volcanic ash sparsely scattered throughout.

smear slide:	4 cm
Quartz	34
Feldspar	1
Mica	<1
Heavy minerals	10
Clay	40
Volcanic glass	2
Glauconite	1
Micro-Mn nodules	<<1
Diatoms	10
Radiolarians	<1
Sponge spicules	2

TC 1578-20(A)

Latitude: 70°28.3'S
Longitude: 10°23.0'W
Water Depth: 1734 m
Core Length: 50 cm

0-50 cm: Mud, olive gray (5Y 4/1); mottled throughout; silt content decreases with depth; zone of higher diatom content between 48-50 cm. NOTE: the bottom 2 cm of core sediment are bagged.

smear slides:	5 cm	30 cm
Quartz	30	20
Feldspar	2	2
Mica	2	2
Heavy minerals	10	8
Clay	44	57
Volcanic glass	3	3
Glauconite	2	1
Diatoms	4	4
Radiolarians	<1	<1
Sponge spicules	3	3

TC 1578-20(B)

Latitude: 70°28.3'S
Longitude: 10°23.0'W
Water Depth: 1734 m
Core Length: 29 cm

0-29 cm: Mud, olive gray (5Y 4/1); volcanic ash sparsely scattered throughout.

smear slides:	5 cm	24 cm
Quartz	28	31
Feldspar	2	2
Mica	2	2
Heavy minerals	11	10
Clay	44	45
Volcanic glass	3	3
Glauconite	2	1
Diatoms	5	3
Radiolarians	<1	<1
Sponge spicules	3	3
Silicoflagellates	<<1	<<1

TC 1578-22(A)

Latitude: 69°55.1'S
Longitude: 10°57.8'W
Water Depth: 2820 m
Core Length: 36 cm

0-36 cm: Mud, olive gray (5Y 4/1); moderately disturbed (washed) between 28-36 cm; slightly disturbed (washed) between 0-28 cm.

smear slides:	5 cm	20 cm
Quartz	14	12
Feldspar	<1	1
Mica	<1	<1
Heavy minerals	8	8
Clay	56	62
Volcanic glass	1	1
Glauconite	<1	<1
Carbonate unspecified	6	5
Foraminifera	12	11
Diatoms	2	-
Sponge spicules	1	<1

TC 1578-22(B)

Latitude: 69°55.1'S
Longitude: 10°57.8'W
Water Depth: 2820 m
Core Length: 34 cm

1-34 cm: Mud, moderate olive brown (5Y 4/4); slightly disturbed (washed) throughout. NOTE: the deck-log indicates that the top 2 cm of the core were sampled from the core liner aboard ship, and that the core was allowed to resettle in a vertical position. The appearance of the core top indicates that a portion of the top 2 cm was sampled, with the remainder having resettled. Therefore, the top of the sediment column in the core liner has been assigned a depth of 1 cm, with the possibility that the 1-2 cm interval is actually a slumped mixture of sediment originally from 0-2 cm.

smear slides:	7 cm	25 cm
Quartz	15	18
Feldspar	1	1
Mica	1	<1
Heavy minerals	10	15
Clay	58	50
Volcanic glass	2	1
Glauconite	<1	-
Carbonate unspecified	5	4
Foraminifera	8	11
Sponge spicules	<1	<<1

TC 1578-24

Latitude: 69°58.2'S
Longitude: 12°17.0'W
Water Depth: 4078 m
Core Length: Bag

NOTE: According to the deck-log, the entire core barrel assembly fell off during the coring operation and was lost. Some sediment, however, was recovered from inside the trigger weight assembly, and was put into three bags aboard ship. These are labeled as bags 1, 2, and 3. Sediment in bag 1 was removed first, and thus is probably stratigraphically lower than the sediment in bags 2 and 3. Descriptions of these sediments are as follows:

Bag 3 (103 grams): Mud, moderate olive brown (5Y 4/4); volcanic ash common throughout.

Bags 2 (54 grams) and 1 (298 grams): Sandy mud, moderate olive brown (5Y 4/4); volcanic ash common throughout.

smear slides:	bag 3	bag 2	bag 1
Quartz	30	46	43
Feldspar	1	2	2
Mica	1	2	2
Heavy minerals	13	12	10
Clay	41	23	30
Volcanic glass	3	3	3
Glauconite	1	1	1
Carbonate unspecified	5	4	4
Foraminifera	4	7	5
Diatoms	1	<<1	<1
Radiolarians	<1	-	-
Sponge spicules	<1	<1	<1

TC 1578-25(A)

Latitude: 71°01.3'S
Longitude: 18°16.0'W
Water Depth: 4440 m
Core Length: 49 cm

0-49 cm: Mud, light olive gray (5Y 5/2); silt content decreases with depth; foraminifera content decreases with depth; volcanic ash common between 45-49 cm, sparsely scattered between 0-45 cm; sediment slightly thinned between 0-5 cm.

smear slides:	10 cm	42 cm
Quartz	48	53
Feldspar	2	1
Mica	<1	2
Heavy minerals	15	13
Clay	20	23
Volcanic glass	3	4
Glauconite	<<1	3
Carbonate unspecified	7	-
Foraminifera	5	-
Diatoms	<<1	-
Radiolarians	<<1	-
Sponge spicules	<<1	1

TC 1578-25(B)

Latitude: 71°01.3'S
Longitude: 18°16.0'W
Water Depth: 4440 m
Core Length: 53 cm

0-53 cm: Mud, moderate olive brown (5Y 4/4); grain size increases slightly with depth; foraminifera content varies irregularly throughout; slightly disturbed (washed) throughout. NOTE: the deck-log indicates that the "top 1 cm of TCB sampled for (a principal investigator)" aboard ship. The top of the sediment column in the core liner has been assigned a depth of 0 cm.

smear slides:	6 cm	43 cm
Quartz	20	22
Feldspar	1	1
Mica	2	<1
Heavy minerals	6	10
Clay	57	62
Volcanic glass	2	3
Glauconite	1	2
Carbonate unspecified	7	-
Foraminifera	4	-
Sponge spicules	-	<1

TC 1578-26(A)

Latitude: 71°54.1'S
Longitude: 17°15.6'W
Water Depth: 2242 m
Core Length: 33 cm

0-33 cm: Mud, olive gray (5Y 4/1); silt content increases with depth; volcanic ash sparsely scattered throughout.

smear slides:	14 cm	30 cm
Quartz	30	56
Feldspar	2	2
Mica	<1	<1
Heavy minerals	12	15
Clay	49	25
Volcanic glass	3	2
Glauconite	2	-
Diatoms	2	<1
Sponge spicules	<1	-

TC 1578-26(B)

Latitude: 71°54.1'S
Longitude: 17°15.6'W
Water Depth: 2242 m
Core Length: 10 cm

0-10 cm: Mud, olive gray (5Y 4/1); volcanic ash sparsely scattered throughout.

smear slide:	5 cm
Quartz	38
Feldspar	1
Mica	1
Heavy minerals	12
Clay	32
Volcanic glass	5
Glauconite	2
Diatoms	5
Radiolarians	1
Sponge spicules	3

TC 1578-27(A)

Latitude: 72°24.5'S
Longitude: 19°25.1'W
Water Depth: 3274 m
Core Length: 51 cm

0-51 cm: Mud, olive gray (5Y 4/1); silt content increases with depth; volcanic ash common between 31-46 cm; volcanic ash sparsely scattered between 0-31 cm; 20 mm angular, quartzitic pebble between 28-30 cm; 15 mm subangular quartzitic pebble between 29-31 cm.

smear slides:	10 cm	43 cm
Quartz	30	35
Feldspar	1	2
Mica	1	<1
Heavy minerals	10	17
Clay	51	39
Volcanic glass	3	4
Glauconite	<1	2
Carbonate unspecified	3	1
Foraminifera	1	<1
Sponge spicules	<1	<1

TC 1578-27(B)

Latitude: 72°24.5'S
Longitude: 19°25.1'W
Water Depth: 3274 m
Core Length: 52 cm

0-1.5 cm: Core interval not received by FSU. NOTE: according to the deck-log, the top 1.5 cm of sediment were removed from the core liner aboard ship. Thus, the top of the sediment column in the core liner has been assigned a depth of 1.5 cm.

1.5-52 cm: Mud, olive gray (5Y 4/1); volcanic ash common between 44-52 cm; volcanic ash sparsely scattered between 1.5-44 cm; zone with higher content of rock fragments, up to 4 mm, between 44-45 cm; 10 mm angular basaltic pebble between 48-49 cm.

smear slides:	10 cm	47 cm
Quartz	24	43
Feldspar	1	2
Mica	1	1
Heavy minerals	10	18
Clay	54	30
Volcanic glass	3	4
Glauconite	1	<1
Carbonate unspecified	4	2
Foraminifera	1	<1
Diatoms	1	<<1
Radiolarians	-	<<1
Sponge spicules	<<1	<1

TC 1578-28

Latitude: 72°11.4'S
Longitude: 15°18.3'W
Water Depth: 530 m
Core Length: 58 cm

0.75-58 cm: Mud, olive gray (5Y 4/1); mottled throughout; silt content increases with depth; volcanic ash sparsely scattered throughout. NOTE: according to the deck-log, one-half of the top 1.5 cm of sediment was removed from the core liner aboard ship. The appearance of the core top, however, is as if the entire interval of the top 0.75 cm was sampled. Therefore, the top of the sediment column in the core liner has been assigned a depth of 0.75 cm, with the possibility that the 0.75-1.5 cm interval is actually a slumped mixture of sediment originally from 0-1.5 cm.

smear slides:	10 cm	48 cm
Quartz	42	45
Feldspar	1	1
Mica	<1	<1
Heavy minerals	11	13
Clay	36	35
Volcanic glass	3	3
Glauconite	1	1
Carbonate unspecified	-	2
Diatoms	4	<1
Radiolarians	<<1	-
Sponge spicules	2	<1
Silicoflagellates	<<1	-

TC 1578-30

Latitude: 71°58.9'S
Longitude: 16°12.6'W
Water Depth: 530 m
Core Length: Bag

Bag sample from core catcher (47 grams): Sandy mud, olive gray (5Y 3/2); rock fragments up to 24 mm abundant throughout.

Bag sample from core cutter (47 grams): Sandy mud, olive gray (5Y 3/2); rock fragments up to 5 mm abundant throughout. NOTE: these bag samples represent total sediment recovery by the trigger core.

smear slides:	catcher	cutter
Quartz	42	43
Feldspar	1	1
Mica	<1	<1
Heavy minerals	8	12
Clay	25	27
Volcanic glass	6	5
Rock fragments	<1	-
Glauconite	4	3
Carbonate unspecified	3	3
Foraminifera	5	<1
Diatoms	2	3
Radiolarians	<1	<<1
Sponge spicules	4	3

TC 1578-33

Latitude: 71°55.6'S
Longitude: 16°43.1'W
Water Depth: 1536 m
Core Length: 62 cm

0-62 cm: Mud, light olive gray (5Y 5/2); mottled throughout; volcanic ash common between 3-40 cm; volcanic ash sparsely scattered between 40-62 cm; rock fragments up to 5 mm common throughout; zone of higher diatom content between 0-3 cm (bag sample); 33 mm subangular volcanic breccia between 20-24 cm; 23 mm angular volcanic pebble between 45-48 cm; 25 mm subangular fine-grained pebble between 49-52 cm. NOTE: according to the deck-log, core-top sediment was recovered from inside the trigger weight assembly. The amount of sediment was estimated to be equivalent to approximately 3 cm of core liner sediment; one-half of this amount was sampled aboard ship for a principal investigator, and the remainder was bagged. Thus, the top of the sediment column in the core liner has been assigned a depth of 3 cm.

smear slides:	15 cm	49 cm
Quartz	28	22
Feldspar	1	<1
Mica	1	1
Heavy minerals	10	10
Clay	56	54
Volcanic glass	3	3
Glauconite	1	1
Carbonate unspecified	-	5
Foraminifera	-	4
Diatoms	-	<1
Sponge spicules	<1	<1

TC 1578-34(A)

Latitude: 71°54.0'S
Longitude: 16°55.9'W
Water Depth: 1865 m
Core Length: 65 cm

0-40 cm: Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout; rock fragments up to 5 mm sparsely scattered throughout; gradational contact.

40-65 cm: Silt, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

smear slides:	10 cm	55 cm
Quartz	34	54
Feldspar	1	2
Mica	<<1	<<1
Heavy minerals	11	20
Clay	52	15
Volcanic glass	1	1
Glauconite	1	3
Carbonate unspecified	-	4
Foraminifera	-	1
Diatoms	<1	-
Sponge spicules	<1	-

TC 1578-34(B)

Latitude: 71°54.0'S
Longitude: 16°55.9'W
Water Depth: 1865 m
Core Length: 60 cm

0-2 cm: Core interval not received by FSU.

2-20 cm: Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout; gradational contact.

20-60 cm: Silt, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout; 5 mm angular basaltic pebble between 48-49 cm.

smear slides:	15 cm	50 cm
Quartz	30	58
Feldspar	1	1
Mica	<1	<1
Heavy minerals	8	12
Clay	57	20
Volcanic glass	3	4
Glauconite	1	2
Carbonate unspecified	-	1
Foraminifera	-	2
Diatoms	<<1	-
Sponge spicules	<<1	<1

TC 1578-35(A)

Latitude: 71°51.5'S
Longitude: 17°10.2'W
Water Depth: 2350 m
Core Length: 21 cm

0-21 cm: Mud, light olive gray (5Y 5/2); silt content varies irregularly throughout; volcanic ash sparsely scattered throughout.

smear slides:	5 cm	17 cm
Quartz	22	24
Feldspar	2	1
Mica	2	1
Heavy minerals	12	10
Clay	45	49
Volcanic glass	6	4
Glauconite	3	2
Diatoms	4	8
Radiolarians	1	<1
Sponge spicules	3	1
Silicoflagellates	-	<<1

TC 1578-35(B)

Latitude: 71°51.5'S
Longitude: 17°10.2'W
Water Depth: 2350 m
Core Length: 9 cm

0-2 cm: Core interval not received by FSU.

2-9 cm: Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

smear slide:	5 cm
Quartz	34
Feldspar	1
Mica	1
Heavy minerals	10
Clay	40
Volcanic glass	4
Glauconite	3
Diatoms	3
Radiolarians	1
Sponge spicules	3

TC 1578-36(A)

Latitude: 71°46.6'S
Longitude: 17°31.1'W
Water Depth: 2751 m
Core Length: 59 cm

0-59 cm: Mud, olive gray (5Y 4/1); silt content varies irregularly throughout; volcanic ash common throughout.

smear slides:	15 cm	46 cm
Quartz	30	48
Feldspar	1	1
Mica	1	1
Heavy minerals	11	15
Clay	53	25
Volcanic glass	3	6
Glauconite	1	4
Diatoms	<1	<1
Sponge spicules	<1	-

TC 1578-36(B)

Latitude: 71°46.6'S
Longitude: 17°31.1'W
Water Depth: 2751 m
Core Length: 53 cm

0-53 cm: Mud, olive gray (5Y 4/1); silt content varies irregularly throughout; volcanic ash common throughout; core thinned between 0-15 cm.

smear slides:	10 cm	45 cm
Quartz	35	40
Feldspar	2	1
Mica	<1	1
Heavy minerals	10	10
Clay	46	41
Volcanic glass	3	4
Glauconite	1	3
Diatoms	2	<1
Radiolarians	<1	<1
Sponge spicules	1	<1

TC 1578-37(A)

Latitude: 71°31.6'S
Longitude: 18°07.5'W
Water Depth: 3681 m
Core Length: 52 cm

0-25 cm: Mud, olive gray (5Y 4/1); foraminifera content varies irregularly throughout; volcanic ash common throughout; 1 cm lens of volcanic ash between 24-25 cm; slightly disturbed (washed) throughout; gradational contact.

25-52 cm: Marly, foraminiferal ooze, olive gray (5Y 4/1); foraminifera content varies irregularly throughout; volcanic ash sparsely scattered throughout; slightly disturbed (washed) throughout.

smear slides:	10 cm	40 cm
Quartz	21	12
Feldspar	2	1
Mica	<1	-
Heavy minerals	8	6
Clay	48	42
Volcanic glass	4	3
Glauconite	2	-
Micro-Mn nodules	<<1	-
Carbonate unspecified	4	6
Foraminifera	10	30
Calcareous nannos	<<1	-
Diatoms	1	<1
Radiolarians	<<1	-
Sponge spicules	<1	-

TC 1578-37(B)

Latitude: 71°31.6'S
Longitude: 18°07.5'W
Water Depth: 3681 m
Core Length: 47 cm

0-23 cm: Mud, olive gray (5Y 4/1); volcanic ash common throughout; volcanic ash laminae between 6-7 cm and 13-14 cm; gradational contact.

23-47 cm: Marly, foraminiferal ooze, olive gray (5Y 4/1); foraminifera content varies irregularly throughout; volcanic ash sparsely scattered throughout; slightly disturbed (washed) throughout.

smear slides:	9 cm	38 cm
Quartz	19	16
Feldspar	1	2
Mica	-	<<1
Heavy minerals	8	4
Clay	60	36
Volcanic glass	3	2
Glauconite	1	<1
Carbonate unspecified	6	5
Foraminifera	2	35
Calcareous nannos	<1	-
Diatoms	<1	-
Sponge spicules	-	<1

TC 1578-38(A)

Latitude: 71°14.2'S
Longitude: 19°08.8'W
Water Depth: 4301 m
Core Length: 22 cm

0-22 cm: Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout; volcanic ash lamina between 14-15 cm.

smear slides:	6 cm	18 cm
Quartz	18	25
Feldspar	1	1
Mica	<1	<1
Heavy minerals	10	11
Clay	67	58
Volcanic glass	4	3
Glauconite	-	1
Diatoms	<1	<1
Radiolarians	<1	-
Sponge spicules	-	1

TC 1578-38(B)

Latitude: 71°14.2'S
Longitude: 19°08.8'W
Water Depth: 4301 m
Core Length: 25 cm

0-1.5 cm: Core interval not received by FSU. NOTE: deck-log indicates that this interval was removed from core liner aboard ship.

1.5-25 cm: Mud, olive gray (5Y 4/1); volcanic ash sparsely scattered throughout. NOTE: sediment between 18-25 cm is bagged. Deck-log does not indicate why this interval required bagging.

smear slides:	6 cm	15 cm
Quartz	26	20
Feldspar	<1	1
Mica	1	-
Heavy minerals	12	8
Clay	55	66
Volcanic glass	3	4
Glauconite	1	-
Micro-Mn nodules	-	<1
Diatoms	1	<1
Radiolarians	<1	-
Sponge spicules	1	1

TC 1578-39(A)

Latitude: 70°39.4'S
Longitude: 21°34.6'W
Water Depth: 4334 m
Core Length: 45 cm

0-45 cm: Mud, dark yellowish brown (10YR 4/2); silt layers between 20-27 cm and 34-40 cm; clay lamina, medium dark gray (N4), between 14-15 cm; 1 cm silt lens between 4-5 cm; silt lenses (<1 cm) sparsely scattered throughout; 3 cm irregular clay lens, medium dark gray (N4), soft, between 9-12 cm.

smear slides:	(lens) 10 cm	15 cm	36 cm
Quartz	12	41	44
Feldspar	1	1	1
Mica	-	2	1
Heavy minerals	4	13	10
Clay	78	35	40
Volcanic glass	5	4	3
Glauconite	-	1	-
Diatoms	-	2	<1
Sponge spicules	-	1	1

TC 1578-39(B)

Latitude: 70°39.4'S
Longitude: 21°34.6'W
Water Depth: 4334 m
Core Length: 68 cm

0-4 cm: Core interval not received by FSU. NOTE: according to the deck-log, an estimated length of 4 cm of sediment were recovered from inside the trigger weight assembly. This sediment was bagged, of which approximately one-fourth was removed aboard ship for a principal investigator. The remainder, however, was not received at the Facility.

4-68 cm: Mud, dark yellowish brown (10YR 4/2); clay layer between 10-11 cm; silt layer between 22-27 cm; 2 cm silt wedge between 37-39 cm; clay lamina between 47-48 cm; 1 cm silt lenses between 17-18 cm, 19-20 cm, 43-44 cm; silt lenses (<1 cm) sparsely scattered throughout; 5 mm fragmented quartz pebble between 66-67 cm.

smear slides:	12 cm	(layer) 25 cm	54 cm
Quartz	24	67	40
Feldspar	1	1	1
Mica	-	4	<<1
Heavy minerals	9	23	10
Clay	60	2	42
Volcanic glass	5	-	6
Glauconite	-	<1	-
Diatoms	1	<1	1
Radiolarians	-	-	<1
Sponge spicules	-	3	<1

TC 1578-40(A)

Latitude: 69°58.9'S
Longitude: 26°02.2'W
Water Depth: 4481 m
Core Length: 67 cm

0-67 cm: Pelagic clay, dark yellowish brown (10YR 4/2); highly disturbed throughout.

smear slides:	10 cm	50 cm
Quartz	18	57
Feldspar	2	2
Mica	-	<1
Heavy minerals	8	15
Clay	66	22
Volcanic glass	6	4
Glauconite	-	<1
Micro-Mn nodules	<<1	<<1
Diatoms	<1	-
Sponge spicules	<<1	<<1

TC 1578-40(B)

Latitude: 69°58.9'S
Longitude: 26°02.2'W
Water Depth: 4481 m
Core Length: 62 cm

0-25 cm: Pelagic clay, dark yellowish brown (10YR 4/2); silt content increases with depth; slightly disturbed (washed) between 0-4 cm; gradational contact.

25-62 cm: Mud, dark yellowish brown (10YR 4/2); zone of higher foraminifera content between 25-35 cm; 3 cm silt lens between 46-49 cm.

smear slides:	13 cm	(zone) 28 cm	(lens) 48 cm	50 cm
Quartz	11	24	50	36
Feldspar	1	1	1	1
Mica	<1	-	1	1
Heavy minerals	6	6	35	20
Clay	78	42	1	35
Volcanic glass	4	2	8	6
Glauconite	-	<<1	4	1
Carbonate unspecified	-	16	-	-
Foraminifera	-	9	-	-
Diatoms	<1	<1	-	-
Sponge spicules	-	<<1	<<1	<1

TC 1578-41(A)

Latitude: 69°00.5'S
Longitude: 24°46.6'W
Water Depth: 4631 m
Core Length: 65 cm

0-20 cm: Mud, moderate olive brown (5Y 4/4), with olive gray (5Y 3/2) bioturbations; moderately bioturbated throughout; gradational contact. NOTE: approximately 2 cm of sediment from the core top were recovered from inside the trigger weight assembly. This sediment is bagged. Thus, the top of the sediment column in the core liner has been assigned a depth of 2 cm.

20-40 cm: Pelagic clay, moderate olive brown (5Y 4/4), with olive gray (5Y 3/2) bioturbations; moderately stained with ferro-manganese oxides between 31-40 cm; moderately bioturbated throughout; gradational contact.

40-65 cm: Mud, moderate olive brown (5Y 4/4), with olive gray (5Y 3/2) bioturbations, abruptly changing to dark yellowish brown (10YR 4/2) at 53 cm; silt content increases with depth; moderately stained with ferro-manganese oxides between 40-43 cm, 49-52 cm and 53-65 cm; moderately bioturbated between 40-53 cm.

smear slides:	13 cm	34 cm	55 cm
Quartz	30	7	40
Feldspar	1	<1	1
Mica	<1	-	1
Heavy minerals	10	3	10
Clay	51	84	41
Volcanic glass	6	5	6
Glauconite	-	-	<1
Micro-Mn nodules	-	-	<1
Carbonate unspecified	2	1	-
Diatoms	<<1	-	-
Sponge spicules	<1	-	1

TC 1578-41(B)

Latitude: 69°00.5'S
Longitude: 24°46.6'W
Water Depth: 4631 m
Core Length: 66 cm

0-26 cm: Pelagic clay, moderate olive brown (5Y 4/4), with olive gray (5Y 3/2) bioturbations; highly bioturbated throughout; sharp, bioturbated contact. NOTE: a small amount of core-top sediment (<1 cm) was recovered from inside the trigger weight assembly. This sediment is bagged. The top of the sediment column in the core liner has been assigned a depth of 0 cm.

26-66 cm: Pelagic clay, dark yellowish brown (10YR 4/2); silt content increases with depth; moderately stained with ferro-manganese oxides between 26-37 cm and 46-60 cm; moderately bioturbated between 38-46 cm and 60-66 cm.

smear slides:	12 cm	30 cm	58 cm
Quartz	14	9	20
Feldspar	1	<1	1
Mica	<1	-	<1
Heavy minerals	4	5	8
Clay	77	83	62
Volcanic glass	3	3	4
Glauconite	-	-	<1
Micro-Mn nodules	<<1	-	-
Carbonate unspecified	1	-	4
Foraminifera	-	-	1
Diatoms	<1	<<1	<<1
Sponge spicules	<<1	-	<<1

TC 1578-42(A)

Latitude: 67°59.3'S
Longitude: 23°26.1'W
Water Depth: 4746 m
Core Length: 66 cm

0-66 cm: Pelagic clay, light olive gray (5Y 5/2); silt content increases with depth; silt layers between 20-22 cm and 45-48 cm; silt lenses between 53-54 cm (0.5 cm), 58-59 cm (0.5 cm), and 61-62 cm (1 cm).

smear slides:	15 cm	(layer) 21 cm	55 cm
Quartz	8	84	33
Feldspar	1	2	1
Mica	-	1	<1
Heavy minerals	3	6	5
Clay	83	1	58
Volcanic glass	4	4	3
Glauconite	-	1	-
Micro-Mn nodules	-	-	<<1
Zeolite	<<1	-	-
Carbonate unspecified	1	-	-
Diatoms	<<1	<<1	<1
Radiolarians	-	-	<<1
Sponge spicules	-	1	<<1

TC 1578-42(B)

Latitude: 67°59.3'S
Longitude: 23°26.1'W
Water Depth: 4746 m
Core Length: 40 cm

0-40 cm: Pelagic clay, light olive gray (5Y 5/2); silt content increases slightly with depth; silt layers between 20-23 cm and 24-28 cm; highly disturbed (washed) between 0-5 cm.

smear slides:	12 cm	(layer) 26 cm	38 cm
Quartz	20	73	22
Feldspar	1	2	1
Mica	<1	1	-
Heavy minerals	5	15	3
Clay	71	2	69
Volcanic glass	3	6	5
Glauconite	-	<1	-
Micro-Mn nodules	<<1	-	<1
Carbonate unspecified	<1	-	<<1
Diatoms	<1	-	<1
Sponge spicules	<<1	1	-

TC 1578-43(A)

Latitude: 67°00.3'S
Longitude: 22°07.1'W
Water Depth: 4812 m
Core Length: 64 cm

0-64 cm: Pelagic clay, olive gray (5Y 3/2) and dark yellowish brown (10YR 4/2); 0.5 cm silt lens between 47-48 cm; highly bioturbated throughout. NOTE: the tops of trigger cores 43(A) and 43(B) were put in one bag aboard ship. The total amount of sediment in the bag approximates 2 cm of sediment in a core liner; half of this amount has been assigned to each core length. Thus, the top of the sediment column in the core liner has been assigned a depth of 1 cm.

smear slides:	10 cm	50 cm
Quartz	13	10
Feldspar	1	1
Mica	<<1	-
Heavy minerals	3	2
Clay	78	81
Volcanic glass	5	5
Micro-Mn nodules	<<1	-
Carbonate unspecified	<1	1
Diatoms	<<1	<<1
Radiolarians	<<1	<<1
Sponge spicules	<<1	-

TC 1578-43(B)

Latitude: 67°00.3'S
Longitude: 22°07.1'W
Water Depth: 4812 m
Core Length: 66 cm

0-66 cm: Pelagic clay, olive gray (5Y 3/2) and dark yellowish brown (10YR 4/2); silt content decreases markedly with depth; highly bioturbated throughout. NOTE: see NOTE for TC 1578-43(A).

smear slides:	10 cm	50 cm
Quartz	30	5
Feldspar	1	1
Mica	<1	-
Heavy minerals	8	2
Clay	48	84
Volcanic glass	9	6
Micro-Mn nodules	1	1
Carbonate unspecified	3	1
Diatoms	<1	-
Sponge spicules	<1	-

TC 1578-44(A)

Latitude: 66°00.9'S
Longitude: 20°53.4'W
Water Depth: 4857 m
Core Length: 37 cm

0-11 cm: Pelagic clay, olive gray (5Y 3/2), with bioturbations of light olive gray (5Y 5/2); highly bioturbated throughout; sharp, bioturbated contact.

11-37 cm: Pelagic clay, light olive gray (5Y 5/2); 6 cm silt layer between 31-37 cm; 1 cm lens of volanic ash between 16-17 cm; slightly bioturbated throughout.

smear slides:	6 cm	24 cm
Quartz	7	20
Feldspar	1	1
Mica	-	<<1
Heavy minerals	3	5
Clay	85	70
Volcanic glass	4	3
Micro-Mn nodules	<<1	1
Carbonate unspecified	<1	<1
Diatoms	<1	<1
Sponge spicules	<<1	<<1

TC 1578-44(B)

Latitude: 66°00.9'S
Longitude: 20°53.4'W
Water Depth: 4857 m
Core Length: 26 cm

0-3 cm: Core interval not received by FSU. NOTE: the top 3 cm of the core were removed from the core liner aboard ship.

3-10 cm: Pelagic clay, olive gray (5Y 3/2), with bioturbations of light olive gray (5Y 5/2); highly bioturbated throughout; sharp, bioturbated contact.

10-26 cm: Pelagic clay, light olive gray (5Y 5/2); slightly bioturbated throughout.

smear slides:	7 cm	17 cm
Quartz	6	12
Feldspar	1	1
Mica	<<1	<<1
Heavy minerals	4	4
Clay	85	79
Volcanic glass	4	4
Carbonate unspecified	<<1	<<1
Diatoms	<1	<<1

TC 1578-45(A)

Latitide: 64°54.5'S
Longitude: 19°58.3'W
Water Depth: 4898 m
Core Length: 69 cm

0-69 cm: Pelagic clay, light olive gray (5Y 5/2); slightly bioturbated throughout; core slightly washed (thinned) between 10-20 cm.

smear slides:	8 cm	50 cm
Quartz	7	7
Feldspar	1	1
Mica	-	<1
Heavy minerals	3	5
Clay	87	84
Volcanic glass	2	3
Diatoms	<<1	<<1
Radiolarians	-	<<1
Sponge spicules	-	<<1

TC 1578-45(B)

Latitude: 64°54.5'S
Longitude: 19°58.3'W
Water Depth: 4898 m
Core Length: 69 cm

0-69 cm: Pelagic clay, light olive gray (5Y 5/2); 1 cm layer of moderate olive brown (5Y 4/4) clay between 29-30 cm; slightly bioturbated throughout; slightly disturbed throughout.

smear slides:	17 cm	54 cm
Quartz	10	6
Feldspar	1	<1
Heavy minerals	4	4
Clay	82	88
Volcanic glass	3	2

TC 1578-47(A)

Latitude: 63°09.2'S
Longitude: 20°08.9'W
Water Depth: 4890 m
Core Length: 49 cm

0-49 cm: Pelagic clay, light olive gray (5Y 5/2); 5 mm sedimentary clasts with higher silt content between 16-17 cm and 18-19 cm; slightly bioturbated throughout.

smear slides:	10 cm	38 cm
Quartz	5	5
Feldspar	<1	<1
Heavy minerals	3	2
Clay	89	89
Volcanic glass	3	3
Carbonate unspecified	-	1
Diatoms	<1	-
Radiolarians	<<1	-

TC 1578-47(B)

Latitude: 63°09.2'S
Longitude: 20°08.9'W
Water Depth: 4890 m
Core Length: 48 cm

0-48 cm: Pelagic clay, light olive gray (5Y 5/2); zone of higher silt content between 15-18 cm; 5 mm sedimentary clast with higher silt content between 17-18 cm; slightly bioturbated throughout.

smear slides:	8 cm	46 cm
Quartz	5	5
Feldspar	1	<1
Mica	<1	<<1
Heavy minerals	2	2
Clay	87	89
Volcanic glass	5	4
Micro-Mn nodules	<<1	<<1
Diatoms	<1	-
Radiolarians	<<1	-
Sponge spicules	<<1	<<1

TC 1578-47A(A)

Latitude: 62°59.5'S
Longitude: 19°46.8'W
Water Depth: 4855 m
Core Length: 73 cm

0-2 cm(?): Core interval not received by FSU. NOTE: the estimate of two centimeters for this interval is based upon an indication in the deck-log that the sediment was recovered from inside the trigger weight above top of core. This sediment was bagged and estimated as approximately two centimeters aboard ship.

2-73 cm: Pelagic clay, light olive gray (5Y 5/2); zones of higher volcanic ash content between 7-9 cm and 42-43 cm; 10 mm sedimentary clast with higher volcanic ash content between 61-62 cm; slightly bioturbated throughout.

smear slides:	15 cm	55 cm	(sed. clast) 62 cm
Quartz	9	10	14
Feldspar	1	<1	4
Mica	-	<<1	-
Heavy minerals	2	3	5
Clay	84	84	46
Volcanic glass	4	3	31
Diatoms	<<1	-	-
Sponge spicules	<<1	-	-

TC 1578-47A(B)

Latitude: 62°59.5'S
Longitude: 19°46.8'W
Water Depth: 4855 m
Core Length: 56 cm

0-56 cm: Pelagic clay, light olive gray (5Y 5/2); zones of higher volcanic ash content between 9-13 cm and 44-47 cm; slightly bioturbated throughout; moderately disturbed (washed) between 54-56 cm.

smear slides:	15 cm	(zone) 46 cm	53 cm
Quartz	5	8	6
Feldspar	1	3	1
Heavy minerals	2	3	3
Clay	89	74	86
Volcanic glass	3	12	4
Diatoms	-	<<1	-

TC 1578-48(A)

Latitude: 61°59.7'S
Longitude: 20°00.3'W
Water Depth: 4890 m
Core Length: 58 cm

0-58 cm: Pelagic clay, light olive gray (5Y 5/2); zone of higher volcanic ash content between 12-18 cm; slightly bioturbated throughout.

smear slides:	6 cm	(zone) 15 cm	50 cm
Quartz	6	5	10
Feldspar	1	2	1
Heavy minerals	3	2	3
Clay	86	40	83
Volcanic glass	4	51	3
Diatoms	<<1	<<1	-
Sponge spicules	<<1	-	-

TC 1578-48(B)

Latitude: 61°59.7'S
Longitude: 20°00.3'W
Water Depth: 4890 m
Core Length: 68 cm

0-2 cm(?): Core interval not received by FSU. NOTE: the estimate of two centimeters for this interval is based upon an indication in the deck-log that the sediment was recovered from inside the trigger weight above top of core. This sediment was bagged and estimated as approximately two centimeters aboard ship.

2-68 cm: Pelagic clay, light olive gray (5Y 5/2); zones of higher volcanic ash between 11-16 cm and 65-68 cm; 1 cm lens of volcanic ash between 11-12 cm; slightly bioturbated throughout.

smear slides:	6 cm	(zone) 14 cm	50 cm
Quartz	5	4	9
Feldspar	1	4	1
Heavy minerals	5	2	4
Clay	85	35	81
Volcanic glass	4	55	5
Diatoms	-	-	-
Radiolarians	<1	-	-
Sponge spicules	-	-	<<1

TC 1578-49(A)

Latitude: 61°05.6'S
Longitude: 19°51.9'W
Water Depth: 4718 m
Core Length: 73 cm

0-73 cm: Ash-bearing mud, dark yellowish brown (10YR 4/2); volcanic ash abundant between 35-37 cm; volcanic ash common between 2-35 cm and 37-73 cm; zone of lower volcanic ash content between 0-2 cm; very slight ferromanganese oxide staining throughout; moderately bioturbated between 42-48 cm, bioturbations being filled with diatomaceous ooze, yellowish gray (5Y 7/2); slightly bioturbated between 2-42 cm and 48-73 cm. NOTE: the tops of trigger cores 49(A) and 49(B) were put in one bag aboard ship. The total amount of sediment in the bag approximates 4 cm of sediment in a core liner; half of this has been assigned to each core length. Thus, the top of the sediment column in the core liner has been assigned a depth of 2 cm.

smear slides:	7 cm	64 cm
Quartz	12	13
Feldspar	1	3
Mica	-	<1
Heavy minerals	4	4
Clay	35	37
Volcanic glass	41	35
Diatoms	7	7
Radiolarians	-	1
Sponge spicules	-	<1
Silicoflagellates	-	<<1

TC 1578-49(B)

Latitude: 61°05.6'S
Longitude: 19°51.9'W
Water Depth: 4718 m
Core Length: 70 cm

0-70 cm: Ash-bearing mud, dark yellowish brown (10YR 4/2); volcanic ash content decreases with depth; diatom content varies irregularly with depth, due to washed nature of sediment; volcanic ash abundant between 39-42 cm; volcanic ash common between 2-39 cm and 42-70 cm; slight ferro-manganese oxide staining throughout; zone of lower volcanic ash content between 0-2 cm; moderately disturbed (washed) throughout. NOTE: see NOTE for TC 1578-49(A).

smear slides:	13 cm	63 cm
Quartz	12	3
Feldspar	1	2
Heavy minerals	3	3
Clay	49	77
Volcanic glass	20	8
Glauconite	<1	-
Diatoms	12	5
Radiolarians	3	2
Sponge spicules	<1	-
Silicoflagellates	<<1	-

TC 1578-50(A)

Latitude: 64°57.5'S
Longitude: 24°21.0'W
Water Depth: 4852 m
Core Length: 56 cm

0-56 cm: Pelagic clay, olive gray (5Y 3/2), abruptly changing to light olive gray (5Y 5/2) at 14 cm; very slight ferro-manganese oxide staining between 17-56 cm; moderately bioturbated between 7-14 cm and 45-46 cm; slightly bioturbated between 0-7 cm, 14-45 cm, and 46-56 cm; slightly disturbed between 53-56 cm.

smear slides:	8 cm	43 cm
Quartz	4	6
Feldspar	1	2
Mica	<<1	-
Heavy minerals	3	5
Clay	88	83
Volcanic glass	4	4
Micro-Mn nodules	<1	<1
Diatoms	<<1	<<1

TC 1578-50(B)

Latitude: 64°57.5'S
Longitude: 24°21.0'W
Water Depth: 4852 m
Core Length: 69 cm

0-2 cm: Core interval not received by FSU. NOTE: the deck-log indicates that the top 2 cm of the core were recovered from inside the trigger weight. This sediment was bagged.

2-69 cm: Pelagic clay, olive gray (5Y 3/2), abruptly changing to light olive gray (5Y 5/2) at 15 cm; slight ferro-manganese oxide staining between 19-69 cm; moderately bioturbated between 7-15 cm and 49-58 cm; slightly bioturbated between 0-7 cm, 15-49 cm, and 58-69 cm.

smear slides:	17 cm	58 cm
Quartz	11	4
Feldspar	1	1
Mica	<<1	-
Heavy minerals	2	4
Clay	84	86
Volcanic glass	2	5
Micro-Mn nodules	-	<1
Diatoms	<<1	<<1

TC 1578-51(A)

Latitude: 68°00.8'S
Longitude: 29°51.4'W
Water Depth: 4563 m
Core Length: Bag

Bag sample (23 grams): Sandy mud, dark yellowish brown (10YR 4/2). NOTE: the bag sample represents total sediment recovery by the corer. The deck-log does not indicate origin of sample; presumed to be either from core cutter and/or catcher.

smear slide:	bag
Quartz	48
Feldspar	1
Mica	<1
Heavy minerals	7
Clay	40
Volcanic glass	3
Micro-Mn nodules	<<1
Diatoms	1
Radiolarians	<<1
Sponge spicules	<1

TC 1578-51(B)

Latitude: 68°00.8'S
Longitude: 29°51.4'W
Water Depth: 4563 m
Core Length: Bag

Bag sample (25 grams): Pelagic clay, dark yellowish brown (10YR 4/2). NOTE: see NOTE for TC 1578-51(A).

smear slide:	bag
Quartz	20
Feldspar	1
Mica	1
Heavy minerals	4
Clay	72
Volcanic glass	2
Diatoms	<1
Sponge spicules	<1

TC 1578-52

Latitude: 66°16.0'S
Longitude: 33°04.1'W
Water Depth: 4649 m
Core Length: 67 cm

0-8 cm (bag): Mud, light olive gray (5Y 5/2); moderately stained with ferro-manganese oxides. NOTE: the deck-log does not indicate why the top 8 cm of the core required bagging.

8-67 cm: Pelagic clay, light olive gray (5Y 5/2); volcanic ash common between 53-67 cm; volcanic ash sparsely scattered between 8-53 cm; moderately stained with ferro-manganese oxides between 53-67 cm; slightly stained with ferro-manganese oxides between 8-53 cm; slightly bio-turbated throughout.

smear slides:	0-8 cm(bag)	13 cm	50 cm
Quartz	35	10	21
Feldspar	1	2	1
Heavy minerals	2	2	3
Clay	59	84	72
Volcanic glass	3	2	3
Diatoms	<<1	-	-
Sponge spicules	<<1	-	-

TC 1578-53

Latitude: 64°58.0'S
Longitude: 35°16.6'W
Water Depth: 4733 m
Core Length: Bag

0-3 cm (Bag sample; 17 grams): Mud, light olive gray (5Y 5/2); high clay content; volcanic ash sparsely scattered throughout; micro-manganese nodules sparsely scattered throughout.

3-6 cm (Bag sample; 40 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout; micro-manganese nodules sparsely scattered throughout. NOTE: there is no indication in the deck-log as to why either of these intervals required bagging.

smear slides:	0-3 cm(bag)	3-6 cm(bag)
Quartz	26	38
Feldspar	2	1
Heavy minerals	2	2
Clay	68	56
Volcanic glass	2	3
Glauconite	<<1	<1
Micro-Mn nodules	<<1	-
Diatoms	<<1	<<1
Radiolarians	<<1	<<1
Sponge spicules	-	<<1

TC 1578-53A

Latitude: 64°57.7'S
Longitude: 35°19.9'W
Water Depth: 4731 m
Core Length: 35 cm

0-35 cm: Mud, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered throughout; 0.6 cm layer of sand, olive gray (5Y 4/1), between 12-14 cm; 5.4 cm inclined layer of sand, olive gray (5Y 4/1), between 25-32 cm; sedimentary clasts composed of muddy sand, olive gray (5Y 4/1), compacted, between 6-11 cm (48 mm), 17-19 cm (15 mm), 19-21 cm (14 mm), and 23-26 cm (26 mm).

	(sedimentary clast)	
smear slides:	9 cm	15 cm
Quartz	87	41
Feldspar	2	1
Mica	<1	<1
Heavy minerals	7	4
Clay	2	50
Volcanic glass	<1	4
Glauconite	2	<1
Diatoms	-	<<1
Radiolarians	-	<<1
Sponge spicules	<<1	<<1

TC 1578-54

Latitude: 64°48.1'S
Longitude: 35°43.9'W
Water Depth: 4729 m
Core Length: 81 cm

0-81 cm: Pelagic clay, light olive gray (5Y 5/2); high silt content throughout; volcanic ash sparsely scattered between 0-24 cm; slightly stained with ferro-manganese oxides between 0-24 cm; stringers of silt between 33-49 cm; sedimentary clasts up to 25 mm, composed of silt, light olive gray (5Y 5/2), compacted, abundant between 54-68 cm; slightly disturbed between 77-81 cm. NOTE: this core is in three sections. The top section (0-9 cm) and bottom section (24-81 cm) are in a core liner. The middle section (9-24 cm) is bagged; its approximate length was estimated aboard ship.

smear slides:	4 cm	9-24 cm(bag)	73 cm
Quartz	29	11	28
Feldspar	1	1	1
Mica	<<1	-	<1
Heavy minerals	3	4	3
Clay	64	80	64
Volcanic glass	3	4	4
Glauconite	-	<<1	-
Diatoms	<<1	-	-

TC 1578-54A

Latitude: 64°42.5'S
Longitude: 36°06.3'W
Water Depth: 4724 m
Core Length: 30 cm

0-2 cm: Core interval not received by FSU. NOTE: although the deck-log indicates that only one-half of the top 2 cm of the core was removed from the core liner aboard ship, the core appears to be missing the entire top 2 cm.

2-30 cm: Pelagic clay, light olive gray (5Y 5/2); slightly stained with ferro-manganese oxides throughout; 20 mm rounded sedimentary clast between 22-24 cm, composed of silt, compacted; slightly bioturbated throughout. NOTE: the deck-log also indicates that the stratigraphy of the sediment may be suspect due to a "double hit" by the corer on the sea floor.

smear slides:	15 cm	(sedimentary clast) 22 cm
Quartz	17	90
Feldspar	1	1
Mica	1	<1
Heavy minerals	2	6
Clay	79	3
Volcanic glass	<1	-
Micro-Mn nodules	<<1	<<1
Diatoms	<<1	-
Sponge spicules	-	<<1

TC 1578-56(A)

Latitude: 63°05.8'S
Longitude: 38°27.6'W
Water Depth: 4512 m
Core Length: 56 cm

0-56 cm: Pelagic clay, light olive gray (5Y 5/2); high silt content throughout; highly stained with ferro-manganese oxides between 0-7 cm; moderately stained with ferro-manganese oxides between 7-10 cm; slightly stained with ferro-manganese oxides between 10-56 cm; slightly bioturbated throughout.

smear slides:	4 cm	50 cm
Quartz	24	40
Feldspar	<1	1
Mica	-	<<1
Heavy minerals	3	2
Clay	70	55
Volcanic glass	3	1
Glauconite	<<1	<1
Micro-Mn nodules	<1	-
Diatoms	<1	1
Radiolarians	<<1	<<1
Sponge spicules	<1	<1

TC 1578-56(B)

Latitude: 63°05.8'S
Longitude: 38°27.6'W
Water Depth: 4512 m
Core Length: 50 cm

0-50 cm: Pelagic clay, light olive gray (5Y 5/2); high silt content throughout; silt content decreases with depth; micro-manganese nodules sparsely scattered throughout; slightly stained with ferro-manganese oxides between 48-50 cm; slightly bioturbated throughout.

smear slides:	7 cm	47 cm
Quartz	40	26
Feldspar	1	1
Mica	<1	<<1
Heavy minerals	4	5
Clay	52	64
Volcanic glass	2	4
Glauconite	<1	<<1
Micro-Mn nodules	-	<<1
Diatoms	1	<<1
Sponge spicules	<1	<<1

TC 1578-59

Latitude: 60°33.6'S
Longitude: 40°13.2'W
Water Depth: 2707 m
Core Length: 21 cm

0-2 cm: Core interval not received by FSU. NOTE: although the deck-log indicates that only one-half of the top 2 cm of the core was removed from the core liner aboard ship, the core appears to be missing the entire top 2 cm.

2-21 cm: Muddy sand, light olive gray (5Y 5/2); rounded pebbles up to 5 mm common throughout.

smear slide:	11 cm
Quartz	76
Feldspar	<1
Heavy minerals	3
Clay	17
Glauconite	<1
Diatoms	4
Radiolarians	<<1
Sponge spicules	<<1

TC 1578-62

Latitude: 57°00.1'S
Longitude: 41°01.1'W
Water Depth: 3420 m
Core Length: 55 cm

1-27 cm: Muddy, diatomaceous ooze, light olive gray (5Y 5/2); zone of higher diatom content between 17-19 cm; zones of higher quartz content between 1-6 cm and 21-24 cm, containing coarse sand and abundant, very fine-grained pebbles; 5 mm sedimentary clast between 7-8 cm, composed of diatomaceous mud (5Y 4/1), soft; 13 mm sedimentary clast between 9-11 cm, composed of diatomaceous ooze, light olive brown (5Y 5/6), irregular, soft; 9 mm angular pebble between 26-27 cm; gradational contact. NOTE: the deck-log indicates that one-half of the top 2 cm of the core was sampled from the liner aboard ship. The appearance of the core top, however, is as if the entire interval of the top 1 cm was sampled. Therefore, the top of the sediment column in the core liner has been assigned a depth of 1 cm, with the possibility that the 1-2 cm interval is actually a slumped mixture of sediment originally from 0-2 cm.

27-55 cm: Diatomaceous mud, olive gray (5Y 4/1).

smear slides:	17 cm	48 cm
Quartz	8	35
Feldspar	<1	1
Mica	-	<<1
Heavy minerals	1	4
Clay	18	29
Volcanic glass	<1	1
Glauconite	-	<<1
Micro-Mn nodules	<<1	-
Diatoms	73	30
Radiolarians	<1	<1
Sponge spicules	-	<<1
Silicoflagellates	<1	-

TC 1578-63

Latitude: 56°01.7'S
Longitude: 41°09.7'W
Water Depth: 3091 m
Core Length: 28 cm

0-2 cm: Core interval not received by FSU. NOTE: although the deck-log indicates that only one-half of the top 2 cm of the core was removed from the core liner aboard ship, the core appears to be missing the entire top 2 cm.

2-24 cm: Muddy, diatomaceous ooze, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout; 10 mm subangular pebble between 6-8 cm; sharp contact.

24-28 cm: Diatomaceous mud, light olive gray (5Y 5/2); 1 cm layer of 2 mm sedimentary clasts composed of diatomaceous mud, light olive gray (5Y 5/2), between 24-25 cm.

smear slides:	6 cm	27 cm
Quartz	25	40
Feldspar	1	1
Heavy minerals	3	3
Clay	15	20
Volcanic glass	2	3
Glauconite	<1	-
Diatoms	50	30
Radiolarians	3	3
Sponge spicules	1	-
Silicoflagellates	<1	<1

TC 1578-64

Latitude: 55°39.5'S
Longitude: 41°10.0'W
Water Depth: 3420 m
Core Length: 33 cm

0-1.5 cm: Core interval not received by FSU. NOTE: although the deck-log indicates that only one-half of the top 1.5 cm of the core was removed from the core liner aboard ship, the core appears to be missing the entire top 1.5 cm.

1.5-33 cm: Diatomaceous ooze, light olive gray (5Y 5/2); higher silt content between 20-31 cm; layers of diatomaceous ooze rich in volcanic ash between 23-25 cm and 26-27 cm, olive gray (5Y 3/2); slightly washed along the side between 0-16 cm.

smear slides:	5 cm	30 cm
Quartz	16	19
Feldspar	2	<1
Heavy minerals	1	1
Clay	11	8
Volcanic glass	1	1
Glauconite	-	<<1
Diatoms	67	67
Radiolarians	2	3
Sponge spicules	<1	<1
Silicoflagellates	<1	1

Trigger cores described by Elaine H. Goldstein.

UNDESCRIBED

TRIGGER CORE SEDIMENTS

(BAG SAMPLES)

Core Number	Recovered from:	Core Number	Recovered from:
2	catcher	38(A)	cutter/catcher
5	catcher	38(B)	catcher
6	catcher	39(A)	catcher
9	catcher	39(B)	cutter/catcher
11	cutter/catcher	40(A)	cutter/catcher
12	catcher	40(B)	cutter/catcher
14(A)	cutter/catcher	41(A)	cutter/catcher
14(B)	cutter/catcher	41(B)	cutter/catcher*
16	cutter/catcher	42(A)	cutter/catcher
19(A)	cutter/catcher	42(B)	cutter/catcher
19(B)	cutter/catcher	43(A)	catcher
20(A)	cutter/catcher	43(B)	cutter/catcher
20(B)	cutter/catcher	45(A)	cutter/catcher
22(A)	cutter/catcher	45(B)	cutter/catcher
22(B)	cutter/catcher	47(B)	cutter/catcher*
25(A)	cutter/catcher	47A(B)	cutter/catcher*
25(B)	cutter/catcher	48(A)	cutter/catcher
26(A)	cutter/catcher*	48(B)	cutter/catcher
26(B)	cutter/catcher	49(B)	catcher
27(A)	catcher	50(A)	cutter/catcher
27(B)	cutter/catcher	50(B)	cutter/catcher*
28	cutter/catcher	52	cutter/catcher
33	cutter/catcher	53	catcher
34(A)	cutter/catcher	53A	cutter/catcher
34(B)	catcher	54	cutter
35(A)	cutter/catcher	54A	cutter/catcher
35(B)	cutter/catcher	56(A)	cutter/catcher*
36(A)	cutter/catcher	56(B)	cutter/catcher*
36(B)	cutter/catcher	63	catcher
37(A)	cutter/catcher	64	cutter/catcher
37(B)	cutter/catcher		

*Cutter and catcher sediments in one bag. (All others are bagged separately.)

ISLAS ORCADAS CRUISE 1578

DESCRIPTIONS OF PHLEGER CORES AND PHLEGER CORE BAG SAMPLES

Following are the descriptions of the Phleger cores and bagged sediments from these cores. Bagged sediments usually represent either the recovery by a coring attempt of material lodged in the core cutter and/or the core catcher, or are sediments from the core liner requiring bagging due to core liner implosions, or to difficulties aboard ship in the extrusion of the core liner from bent or otherwise damaged core barrels.

Many of the Phleger cores and their associated bag samples were sampled aboard ship. For this reason, it is appropriate to elaborate somewhat upon various comments appearing in the descriptions of these materials. For example, it is to be noted that the uppermost few centimeters of several Phleger cores are listed as not having been received by FSU. Shipboard records, including the deck-log, identify these portions as having been removed from the cores aboard ship and divided among various principal investigators (Anthony Amos, John Anderson, James Kennett) or their representatives. The recorded length of a removed interval has been taken into account in the measurement of total core length. The lithologies of these intervals, however, are not known. Similarly divided aboard ship was the total sediment recovery obtained at three Phleger coring stations. Since none of these materials, nor any information concerning their lithologies, were received by the Antarctic Research Facility, location data pertaining to them have not been listed in table 2 (page 9), nor are their positions shown on the core location map (figure 2; page 10).

There are a variety of bag samples from the Phleger cores. In some cases, there may be both a core cutter and core catcher sample, bagged separately. In three cases (cores 41, 49, and 57), the cutter and catcher sediments are together in one bag. Cutter and catcher sediments were not always obtained by some cores (or they were obtained, but distributed aboard ship, and thus not received by FSU); other cores recovered one, but not the other. Sediment recovery (as received at FSU) by Phleger core attempts 4, 26, 36, 37, 45, and 49 is limited solely to the bagged material.

All Phleger core sediments have been described according to the same criteria used for description of the piston and trigger cores. These criteria are presented in this volume. Additional information concerning Phleger core recovery appears on page 5.

PH 1578-1

Latitude: 47°35.8'S
Longitude: 53°06.0'W
Water Depth: 5889 m
Core Length: 34 cm

0-2 cm: Core interval not received by FSU.

2-34 cm: Diatomaceous mud, olive gray (5Y 3/2); highly stained with manganese oxides between 2-4 cm, dusky yellowish brown (10YR 2/2); stringer of diatomaceous mud rich in silt between 4-5 cm, moderate brown (5YR 4/4).

Bag sample from bottom 9 cm of core (34-43 cm) and core catcher (103 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash common throughout.

smear slides:	20 cm	bag sample
Quartz	25	14
Feldspar	1	<1
Mica	<<1	-
Heavy minerals	2	2
Clay	31	38
Volcanic glass	2	2
Glauconite	<<1	<1
Micro-Mn nodules	<<1	-
Diatoms	35	39
Radiolarians	3	4
Sponge spicules	1	1
Silicoflagellates	<1	<1
Ebridians	<<1	<<1

PH 1578-2

Latitude: 58°15.4'S
Longitude: 28°39.1'W
Water Depth: 3264 m
Core Length: 12 cm

0-3 cm: Core interval not received by FSU.

3-12 cm: Diatomaceous ooze, moderate brown (5YR 3/4); moderately stained with manganese oxides throughout; slightly mottled throughout; slightly disturbed (washed) throughout.

Bag sample from core catcher (24 grams): Diatomaceous ooze, moderate brown (5YR 3/4); moderately stained with manganese oxides throughout; slightly mottled throughout.

smear slides:	9 cm	catcher
Quartz	4	4
Feldspar	<1	<1
Heavy minerals	<1	1
Clay	6	2
Volcanic glass	<1	3
Glauconite	<<1	<1
Micro-Mn nodules	1	<<1
Diatoms	88	90
Radiolarians	1	<<1
Sponge spicules	-	<<1
Silicoflagellates	<1	<1
Ebridians	-	<<1

PH 1578-4

Latitude: 59°14.6'S
Longitude: 19°42.7'W
Water Depth: 4214 m
Core Length: Bag

Bag sample (17 grams): Diatomaceous ooze, moderate olive brown (5Y 4/4); highly stained with manganese oxides throughout; volcanic ash sparsely scattered throughout; slightly mottled throughout.

smear slide:	bag
Quartz	2
Feldspar	1
Heavy minerals	<<1
Clay	1
Volcanic glass	1
Micro-Mn nodules	<<1
Diatoms	94
Radiolarians	1
Sponge spicules	<<1
Silicoflagellates	<1
Ebridians	<<1

PH 1578-6

Latitude: 59°29.7'S
Longitude: 09°52.0'W
Water Depth: 4285 m
Core Length: 21 cm

0-21 cm: Diatomaceous mud, moderate olive brown (5Y 4/4); diatom content varies with depth; 1.1 cm layer of ash-bearing, diatomaceous mud between 8-10 cm, olive gray (5Y 3/2); 18 mm uncompacted sedimentary clast between 7-9 cm composed of ash-bearing, diatomaceous mud, olive gray (5Y 4/1), slightly bioturbated and enclosed by a thin (<1 mm) rim of diatomaceous mud, light olive gray (5Y 5/2); two irregular, uncompacted sedimentary clasts between 1-2 cm (7 mm) and 3-6 cm (27 mm) composed of diatomaceous mud, light olive gray (5Y 5/2); slightly bioturbated throughout.

Bag sample from core catcher (12 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

smear slides:	19 cm	catcher
Quartz	8	4
Feldspar	<1	1
Heavy minerals	1	1
Clay	63	57
Volcanic glass	4	7
Glauconite	-	<<1
Micro-Mn nodules	-	<<1
Diatoms	22	29
Radiolarians	2	1
Sponge spicules	<<1	<<1

PH 1578-11

Latitude: 64°58.6'S
Longitude: 07°30.0'W
Water Depth: 4971 m
Core Length: 59 cm

0-2 cm: Core interval not received by FSU.

2-59 cm: Mud, light olive gray (5Y 5/2); silt content varies with depth; highly disturbed between 31-52 cm; moderately disturbed between 2-31 cm.

Bag sample from core cutter (20 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

smear slides:	42 cm	55 cm	cutter
Quartz	20	50	35
Feldspar	1	1	1
Mica	-	3	<1
Heavy minerals	6	13	8
Clay	67	23	40
Volcanic glass	2	2	1
Glauconite	<1	<1	<1
Diatoms	4	6	14
Radiolarians	<1	<1	1
Sponge spicules	-	2	<1
Silicoflagellates	<<1	<<1	-

PH 1578-12

Latitude: 66°59.4'S
Longitude: 07°47.0'W
Water Depth: 4804 m
Core Length: 32 cm

0-32 cm: Mud, light olive gray (5Y 5/2); slightly bioturbated throughout.

Bag sample from core catcher (32 grams): Mud, light olive gray (5Y 5/2).

Bag sample from core catcher (23 grams): Mud, light olive gray (5Y 5/2); 2-4 mm angular to subangular basaltic pebbles sparsely scattered throughout.

smear slides:	30 cm	catcher	cutter
Quartz	50	33	46
Feldspar	1	1	1
Mica	<1	<<1	<1
Heavy minerals	10	10	9
Clay	38	48	38
Volcanic glass	<<1	2	2
Glauconite	1	<1	<1
Diatoms	<1	5	4
Radiolarians	-	1	<1
Sponge spicules	<<1	<1	<<1

PH 1578-15

Latitude: 69°18.2'S
Longitude: 10°14.8'W
Water Depth: 3775 m
Core Length: 44 cm

0-3 cm: Core interval not received by FSU.

3-44 cm: Mud, light olive gray (5Y 5/2); 16 mm uncompacted sedimentary clast between 8-10 cm, composed of very fine sand, light olive gray (5Y 5/2); 13 mm angular pebble between 36-38 cm; slightly bioturbated between 16-21 cm.

Bag sample from core cutter (46 grams): Mud, light olive gray (5Y 5/2).

smear slides:	23 cm	cutter
Quartz	36	45
Feldspar	1	2
Mica	<<1	<<1
Heavy minerals	12	12
Clay	45	28
Volcanic glass	1	2
Glauconite	<1	<<1
Carbonate unspecified	5	10
Foraminifera	<<1	<<1
Diatoms	<1	1
Radiolarians	<<1	-
Sponge spicules	<1	<1

PH 1578-19

Latitude: 70°32.4'S
Longitude: 10°16.7'W
Water Depth: 1244 m
Core Length: 13 cm

0-2 cm: Core interval not received by FSU.

2-13 cm: Mud with high silt content, olive gray (5Y 4/1); volcanic ash sparsely scattered throughout.

Bag sample from core catcher (21 grams): Silt, grayish olive (10Y 4/2); volcanic ash common throughout.

Bag sample from core cutter (38 grams): Silt, grayish olive (10Y 4/2); volcanic ash common throughout.

smear slides:	5 cm	catcher	cutter
Quartz	53	44	49
Feldspar	2	2	2
Mica	-	<<1	<<1
Heavy minerals	14	15	11
Clay	20	21	18
Volcanic glass	<1	10	6
Glauconite	1	1	1
Diatoms	6	2	6
Radiolarians	<1	1	2
Sponge spicules	4	4	5
Silicoflagellates	<<1	-	-

PH 1578-20

Latitude: 70°28.2'S
Longitude: 10°21.5'W
Water Depth: 1737 m
Core Length: 10 cm

0-2 cm: Core interval not received by FSU.

2-10 cm: Mud with high silt content, light olive gray (5Y 5/2).

Bag sample from core catcher (39 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

Bag sample from core cutter (51 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

smear slides:	6 cm	catcher	cutter
Quartz	50	50	46
Feldspar	1	2	2
Mica	<<1	<<1	<<1
Heavy minerals	5	8	14
Clay	28	30	25
Volcanic glass	4	2	3
Glauconite	1	<1	1
Diatoms	7	5	4
Radiolarians	1	<<1	<1
Sponge spicules	3	3	5
Silicoflagellates	<<1	-	-

PH 1578-21

Latitude: 70°16.3'S
Longitude: 10°41.1'W
Water Depth: 2191 m
Core Length: 56 cm

0-2 cm: Core interval not received by FSU.

2-56 cm: Mud, light olive gray (5Y 5/2). NOTE: Core cut into two sections aboard ship: 0-47 cm, and 47-56 cm.

Bag sample from core catcher (22 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

Bag sample from core cutter (52 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

smear slides:	15 cm	catcher	cutter
Quartz	35	45	46
Feldspar	1	1	1
Mica	<1	-	-
Heavy minerals	14	12	9
Clay	36	34	31
Volcanic glass	1	2	3
Glauconite	<1	<1	<1
Diatoms	12	4	6
Radiolarians	<<1	<1	1
Sponge spicules	1	2	3

PH 1578-26

Latitude: 71°54.6'S
Longitude: 17°20.0'W
Water Depth: 2264 m
Core Length: Bag

0-4 cm: Core interval not received by FSU.

Bag sample from 4-10 cm (105 grams): Mud, light olive gray (5Y 5/2), poorly sorted; volcanic ash sparsely scattered throughout.

smear slide:	4-10 cm
Quartz	46
Feldspar	2
Mica	<<1
Heavy minerals	8
Clay	36
Volcanic glass	2
Glauconite	1
Diatoms	2
Radiolarians	1
Sponge spicules	2

PH 1578-36

Latitude: 71°45.7'S
Longitude: 17°33.6'W
Water Depth 2771 m
Core Length: Bag

0-3 cm: Core interval not received by FSU.

Bag sample from 3-8 cm (73 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

Bag sample from core catcher (29 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

Bag sample from core cutter (26 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

smear slides:	3-8 cm	catcher	cutter
Quartz	40	36	47
Feldspar	1	1	3
Mica	<<1	<<1	<1
Heavy minerals	9	8	7
Clay	40	47	36
Volcanic glass	1	1	2
Glauconite	<1	<1	<1
Carbonate unspecified	2	2	2
Diatoms	6	4	2
Radiolarians	<<1	<1	<1
Sponge spicules	1	1	1

PH 1578-37

Latitude: 71°32.4'S
Longitude: 18°06.8'W
Water Depth: 3720 m
Core Length: Bag

0-3 cm: Core interval not received by FSU.

Bag sample from core catcher (34 grams): Mud, light olive gray (5Y 5/2), high in quartz content; volcanic ash sparsely scattered throughout.

Bag sample from core cutter (27 grams): Mud, light olive gray (5Y 5/2), high in quartz content; volcanic ash sparsely scattered throughout.

smear slides:	catcher	cutter
Quartz	54	51
Feldspar	1	2
Mica	<1	<<1
Heavy minerals	8	14
Clay	32	21
Volcanic glass	1	3
Glauconite	1	1
Carbonate unspecified	1	8
Foraminifera	<<1	<<1
Diatoms	2	<1
Radiolarians	<<1	<<1
Sponge spicules	<1	<<1

PH 1578-39

Latitude: 70°38.0'S
Longitude: 21°32.3'W
Water Depth: 4345 m
Core Length: 19 cm

0-2 cm: Core interval not received by FSU.

2-19 cm: Mud, light olive gray (5Y 5/2); sedimentary clasts up to 2 mm, sparsely scattered between 10-15 cm, composed of coarse silt, light olive gray (5Y 5/2).

Bag sample from core catcher (22 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

Bag sample from core cutter (34 grams): Mud, light olive gray (5Y 5/2); silt content highly variable within sample; volcanic ash common throughout.

smear slides:	17 cm	catcher	cutter
Quartz	44	46	54
Feldspar	1	1	2
Mica	<<1	<<1	<1
Heavy minerals	9	8	10
Clay	43	43	30
Volcanic glass	3	1	3
Glauconite	<1	<1	<1
Carbonate unspecified	-	<<1	<1
Diatoms	<1	1	1
Radiolarians	-	<<1	-
Sponge spicules	<1	<1	<1

PH 1578-40

Latitude: 69°56.1'S
Longitude: 26°01.4'W
Water Depth: 4486 m
Core Length: 64 cm

0-3 cm: Core interval not received by FSU.

3-64 cm: Pelagic clay, light olive gray (5Y 5/2); zone of higher carbonate content between 22-30 cm; moderately bioturbated between 3-22 cm; slightly bioturbated between 30-64 cm.

Bag sample from core catcher (16 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules common throughout; volcanic ash sparsely scattered throughout.

Bag sample from core cutter (33 grams): Mud, light olive gray (5Y 5/2), micro-manganese nodules sparsely scattered throughout; volcanic ash sparsely scattered throughout.

smear slides:	11 cm	(zone) 25 cm	catcher	cutter
Quartz	15	15	14	33
Feldspar	<1	<1	<1	1
Mica	-	-	<<1	<<1
Heavy minerals	5	4	6	6
Clay	76	67	80	58
Volcanic glass	4	3	<1	1
Glauconite	<<1	<1	<<1	<1
Carbonate unspecified	-	11	<<1	-
Foraminifera	-	<1	-	-
Diatoms	<<1	<<1	<1	1
Radiolarians	-	<<1	-	<<1
Sponge spicules	<<1	-	<<1	<<1

PH 1578-41

Latitude: 68°58.9'S
Longitude: 24°46.4'W
Water Depth: 4631 m
Core Length: 71 cm

0-6 cm: Core interval not received by FSU. NOTE: According to the deck-log, sediment was recovered from inside the trigger weight above the top of the core liner. The bagged volume of sediment was estimated to be equivalent to a core interval of approximately 6 cm; therefore, the top of the sediment column in the liner section listed below begins at 6 cm.

6-71 cm: Pelagic clay, olive gray (5Y 4/1), alternating with mud, light olive gray (5Y 5/2), as follows: clay between 6-10 cm, 21-28 cm, 45-58 cm, 61-71 cm, and mud between 10-21 cm, 28-45 cm, and 58-61 cm; slightly stained with manganese oxides throughout; the clay is moderately bioturbated; sharp, irregular contacts occur between these lithologies.

Bag sample from core cutter/catcher (22 grams): Mud, light olive gray (5Y 5/2); slightly stained with manganese oxides throughout.

smear slides:	12 cm	49 cm	cutter/catcher
Quartz	43	12	48
Feldspar	1	<1	1
Mica	<1	<<1	<<1
Heavy minerals	7	5	8
Clay	46	77	41
Volcanic glass	2	6	2
Glauconite	<1	<<1	<1
Carbonate unspecified	-	-	<1
Diatoms	1	<<1	<1
Radiolarians	<<1	-	-
Sponge spicules	<1	<<1	<<1

PH 1578-42

Latitude: 67°58.4'S
Longitude: 23°22.6'W
Water Depth: 4746 m
Core Length: 45 cm

0-3 cm: Core interval not received by FSU.

3-45 cm: Pelagic clay, light olive gray (5Y 5/2); quartz content varies with depth; micro-manganese nodules sparsely scattered throughout; 4 mm stringer of silt between 11-12 cm; abundant sedimentary clasts up to 3 mm between 20-23 cm and 24-27 cm, composed of silt, light olive gray (5Y 5/2); two sedimentary clasts between 24-27 cm (22 mm), and 34-36 cm (16 mm), composed of silt, light olive gray (5Y 5/2); slightly bioturbated throughout.

Bag sample from core catcher (21 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered throughout.

Bag sample from core cutter (32 grams): Pelagic clay, light olive gray (5Y 5/2); quartz content highly variable; micro-manganese nodules sparsely scattered throughout.

smear slides:	43 cm	catcher	cutter
Quartz	16	21	31
Feldspar	<1	1	1
Mica	<<1	<<1	<<1
Heavy minerals	3	4	3
Clay	77	70	63
Volcanic glass	4	3	2
Glauconite	<<1	<1	<<1
Carbonate unspecified	-	1	-
Diatoms	<<1	<<1	<<1
Radiolarians	-	<<1	-
Sponge spicules	-	<<1	<<1

PH 1578-43

Latitude: 66°59.2'S
Longitude: 22°00.9'W
Water Depth: 4813 m
Core Length: 30 cm

0-2 cm: Core interval not received by FSU.

2-30 cm: Pelagic clay, olive gray (5Y 4/1); micro-manganese nodules sparsely scattered throughout; moderately bioturbated throughout.

Bag sample from core catcher (8 grams): Pelagic clay, olive gray (5Y 4/1); micro-manganese nodules sparsely scattered throughout.

smear slides:	8 cm	catcher
Quartz	5	2
Feldspar	<1	1
Mica	<<1	<<1
Heavy minerals	2	2
Clay	90	91
Volcanic glass	3	4
Diatoms	<<1	<<1

PH 1578-45

Latitude: 64°56.1'S
Longitude: 19°56.6'W
Water Depth: 4898 m
Core Length: Bag

0-4 cm: Core interval not received by FSU.

Bag sample from 4-10 cm (64 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules common throughout.

Bag sample from core catcher (23 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered throughout.

smear slides:	4-10 cm	catcher
Quartz	5	4
Feldspar	1	1
Mica	<<1	-
Heavy minerals	2	1
Clay	90	92
Volcanic glass	2	2
Glauconite	<<1	-
Diatoms	<1	<1
Radiolarians	<<1	<<1
Sponge spicules	<<1	-

PH 1578-49

Latitude: 61°06.4'S
Longitude: 19°48.2'W
Water Depth: 4791 m
Core Length: Bag

0-3 cm: Core interval not received by FSU.

Bag sample from 3-6 cm (37 grams): Diatomaceous mud, dark yellowish brown (10YR 4/2); volcanic ash scattered throughout.

Bag sample from core cutter/catcher (52 grams): Diatomaceous mud, dark yellowish brown (10YR 4/2); volcanic ash scattered throughout.

smear slides:	3-6 cm	cutter/catcher
Quartz	5	4
Feldspar	<1	1
Mica	<<1	-
Heavy minerals	2	2
Clay	40	42
Volcanic glass	4	11
Glauconite	<1	-
Diatoms	45	32
Radiolarians	3	8
Sponge spicules	1	<1

PH 1578-51

Latitude: 68°01.3'S
Longitude: 29°49.1'W
Water Depth: 4563 m
Core Length: 29 cm

0-3 cm: Core interval not received by FSU.

3-29 cm: Pelagic clay, light olive gray (5Y 5/2); slightly stained with manganese oxides throughout; 3 mm sedimentary clast between 12-13 cm, composed of silt, light olive gray (5Y 5/2); slightly bioturbated throughout.

Bag sample from core cutter (33 grams): Pelagic clay, light olive gray (5Y 5/2), slightly stained with manganese oxides throughout.

smear slides:	20 cm	cutter
Quartz	30	25
Feldspar	1	2
Mica	<<1	<1
Heavy minerals	3	3
Clay	62	68
Volcanic glass	4	2
Glauconite	<1	-
Carbonate unspecified	<<1	-
Diatoms	<<1	<1
Sponge spicules	<<1	<<1
Ebridians	-	<<1

PH 1578-52

Latitude: 66°16.1'S
Longitude: 33°06.6'W
Water Depth: 4645 m
Core Length: 41 cm

0-3 cm: Core interval not received by FSU (except for a 17 mm, angular basaltic pebble put in bag aboard ship).

3-41 cm: Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules common throughout; slightly bioturbated throughout.

Bag sample from core catcher (34 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules common throughout.

Bag sample from core cutter (25 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules common throughout; volcanic ash sparsely scattered throughout.

smear slides:	11 cm	catcher	cutter
Quartz	14	38	31
Feldspar	3	1	1
Mica	-	<<1	<<1
Heavy minerals	3	3	3
Clay	78	56	63
Volcanic glass	2	2	2
Glauconite	<<1	<<1	<<1
Diatoms	<<1	-	-
Radiolarians	<<1	-	-
Sponge spicules	<<1	<<1	-

PH 1578-53

Latitude: 64°57.9'S
Longitude: 35°18.1'W
Water Depth: 4733 m
Core Length: 22 cm

0-22 cm: Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules common throughout; sedimentary clasts up to 4 mm between 14-16 cm composed of silt, light olive gray (5Y 5/2); moderately bioturbated between 7-22 cm; slightly bioturbated between 0-7 cm.

smear slide:	17 cm
Quartz	25
Feldspar	1
Heavy minerals	2
Clay	69
Volcanic glass	3
Diatoms	<<1
Radiolarians	<<1
Sponge spicules	<<1

PH 1578-55

Latitude: 64°02.2'S
Longitude: 37°00.3'W
Water Depth: 4603 m
Core Length: 19 cm

0-3 cm: Core interval not received by FSU.

3-19 cm: Pelagic clay, light olive gray (5Y 5/2); micromanganese nodules sparsely scattered throughout; volcanic ash sparsely scattered throughout.

smear slide:	15 cm
Quartz	26
Feldspar	1
Heavy minerals	3
Clay	67
Volcanic glass	3
Diatoms	<<1

PH 1578-56

Latitude: 63°07.6'S
Longitude: 38°24.5'W
Water Depth: 4404 m
Core Length: 10 cm

0-3 cm: Core interval not received by FSU.

3-10 cm: Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

smear slide:	8 cm
Quartz	42
Feldspar	1
Heavy minerals	4
Clay	51
Volcanic glass	2
Glauconite	<1
Diatoms	<1
Radiolarians	<<1
Sponge spicules	<<1

PH 1578-57

Latitude: 61°57.1'S
Longitude: 39°56.5'W
Water Depth: 3387 m
Core Length: 31 cm

0-2 cm: Core interval not received by FSU.

2-31 cm: Mud, light olive gray (5Y 5/2); slightly stained with manganese oxides between 21-31 cm; 2.5 cm layer of mud with higher diatom content, olive gray (5Y 4/1), between 17-20 cm, with a sharp, irregular upper contact, and grading downward into an 1.8 cm layer of mud, light olive gray (5Y 5/2), between 20-22 cm with a sharp, inclined lower contact; moderately bioturbated between 9-13 cm and 21-31 cm; slightly bioturbated between 0-9 cm and 13-17 cm.

Bag sample from core cutter/catcher (26 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered throughout.

smear slides:	10 cm	cutter/catcher
Quartz	41	24
Feldspar	1	1
Mica	<<1	<<1
Heavy minerals	3	2
Clay	48	65
Volcanic glass	2	4
Glauconite	<1	<<1
Diatoms	5	4
Radiolarians	<<1	-
Sponge spicules	<1	<<1

PH 1578-60

Latitude: 58°58.2'S
Longitude: 40°55.3'W
Water Depth: 3383 m
Core Length: 18 cm

0-2 cm: Core interval not received by FSU.

2-18 cm: Diatomaceous ooze, moderate olive brown (5Y 4/4); washed along side of core liner from 9-18 cm.

smear slide:	8 cm
Quartz	7
Feldspar	<1
Heavy minerals	1
Clay	4
Volcanic glass	1
Glauconite	<<1
Micro-Mn nodules	<1
Diatoms	86
Radiolarians	<1
Sponge spicules	<1
Silicoflagellates	1
Ebridians	<<1

Phleger cores described by Jim Bergen and Dave Watkins.

ISLAS ORCADAS CRUISE 1578

DESCRIPTIONS OF PISTON CORE BAG SAMPLES

Following are the descriptions of bagged sediments from piston cores retrieved aboard ARA ISLAS ORCADAS cruise 1578. The majority of these bagged sediments are those which were recovered from the core cutter and/or core catcher. In some cases, the bagged material represents the only sediment recovered by the piston corer at the coring station (cores 17, 21, 51, 53, 53A, 54, and 54A).

Although a representative smear slide was prepared from sediment within each bag sample, the percentage abundance estimates of smear slide constituents were determined for 1) only those bag samples differing significantly in their lithologies from those of the basal lithologic units found in the cores with which they are associated (core 20, bag sample labeled "bottom of core"; core 30, core cutter), or for 2) the seven cores listed above for which the bagged sediments represent the sole recovery by the coring attempt.

All bagged sediments are described according to the criteria presented in this volume. (Refer to table 1, page 7, for corresponding station location data.) The weight of the bagged sediment has been given as an indication of the amount of material available for sampling.

PC 1578-4 Core cutter (191 grams): Muddy, diatomaceous ooze, light olive gray (5Y 5/2); volcanic ash common.

PC 1578-5 Core catcher (173 grams): Diatomaceous ooze, light olive gray (5Y 5/2); volcanic ash common; micro-manganese nodules sparsely scattered.

PC 1578-6 Core cutter and catcher (189 grams): Muddy, diatomaceous ooze, light olive gray (5Y 5/2); volcanic ash sparsely scattered. NOTE: cutter and catcher sediments are in one bag.

PC 1578-7 Core catcher (189 grams): Mud, light olive gray (5Y 5/2).

Core cutter (140 grams): Mud, light olive gray (5Y 5/2).

PC 1578-8 Core catcher (185 grams): Pelagic clay, dusky yellow (5Y 6/4); volcanic ash and micro-manganese nodules sparsely scattered.

PC 1578-11 Core catcher (201 grams): Pelagic clay, light olive gray (5Y 5/2); volcanic ash and micro-manganese nodules sparsely scattered.

PC 1578-12 Core cutter (219 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered.

PC 1578-14 Core catcher (143 grams): Pelagic clay, light olive gray (5Y 5/2); volcanic ash and micro-manganese nodules sparsely scattered; 6 mm angular pebble coated with ferro-manganese oxides.

Core cutter (170 grams): Pelagic clay, light olive gray (5Y 5/2) intermixed with sandy rock fragments, average size 1 mm; rock fragments, coated with ferro-manganese oxides, are common; glauconite sparsely scattered among the rock fragments.

PC 1578-16 Core catcher (171 grams): Mud, olive gray (5Y 3/2); glauconite sparsely scattered.

Core cutter (319 grams): Mud, olive gray (5Y 3/2); glauconite sparsely scattered.

PC 1578-17 Approximately 200 cm of sediment were recovered by the coring attempt. Upon retrieval, however, the lower length of core barrel was found to have been severely bent, and the core liner imploded. From the bottom of the core, sediment was extracted in short segments, and these segments were bagged. It is important to note that labeling of these bags as to the core intervals which they represent was according to the distance in centimeters up-core from the core bottom. Thus, Bag A (see listing below) contains the uppermost level of sediment retrieved from the lower length of core barrel. It is doubtful that this core will be of much use for stratigraphic work, particularly since the upper length of core barrel, containing both the piston and an unknown amount of sediment, was lost overboard. Following are a listing of the bags and a composite description of the bagged sediments:

Bag	Weight(gm)	Interval (distance in cm up-core from core bottom)
A	338	200+
B	247	195-200
C	416	175-185
D	300	155-165
E	360	135-145
F	307	115-125
G	316	95-105
H	334	75- 85
I	504	55- 65
J	313	35- 45
K	657	15- 25 and 0-10
L	264	core catcher

Muddy sand, olive gray (5Y 3/2); pebbles (2-4 mm) common; 41 mm subangular pebble in Bag B; glauconite sparsely scattered. NOTE: smear slide biased toward fine fraction.

smear slide: bag A

Quartz	35	Clay	51
Feldspar	1	Volcanic glass	3
Heavy minerals	8	Glauconite	2

PC 1578-18 Core catcher (50 grams): Very fine to fine pebbles, olive gray (5Y 3/2); pebbles poorly-sorted and subangular.

PC 1578-19 Core catcher (210 grams): Mud, olive gray (5Y 3/2); glauconite sparsely scattered.

Core cutter (204 grams): Mud, olive gray (5Y 3/2); glauconite sparsely scattered.

PC 1578-20 Bag sample labeled "bottom 10 cm of core" (569 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered; 50 mm angular pebble.

smear slide:

Quartz	32	Glauconite	<1
Feldspar	2	Micro-Mn nodules	<<1
Mica	1	Diatoms	18
Heavy minerals	7	Radiolarians	<<1
Clay	35	Sponge spicules	1
Volcanic glass	2	Silicoflagellates	<<1
Rock fragments	2		

PC 1578-21 Total core recovery (other than sample from core catcher) contained in two bags (184 grams, 467 grams): Mud, light olive gray (5Y 5/2); glauconite sparsely scattered. NOTE: deck-log notation states "Mud on the barrel about 2.5 m up the pipe, but only 30 cm of sediment were recovered." There is no indication as to why bagging was necessary. Markings on bags indicate that the 184 gm bag is stratigraphically above the 467 gm bag.

smear slide: 184 gram bag

Quartz	20	Volcanic glass	2
Feldspar	1	Glauconite	1
Mica	1	Diatoms	5
Heavy minerals	6	Radiolarians	<1
Clay	62	Sponge spicules	2

Core catcher (46 grams): Mud, light olive gray (5Y 5/2); glauconite sparsely scattered.

PC 1578-22 Core catcher (63 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered; slightly stained with ferro-manganese oxides.

Core cutter (76 grams): Mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered; slightly stained with ferro-manganese oxides.

PC 1578-24 Core catcher (91 grams): Diatomaceous mud, light olive gray (5Y 5/2) and olive black (5Y 2/1); volcanic ash common; subangular to angular pebbles (2-4 mm) sparsely scattered.

Core cutter (158 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash common; 5 mm subangular pebble.

PC 1578-25 Core catcher (234 grams): Sandy mud, light olive gray (5Y 5/2); subangular pebbles (2-6 mm) sparsely scattered; 10 mm subangular pebble.

PC 1578-26 Core catcher (224 grams): Mud, olive gray (5Y 3/2); volcanic ash common; glauconite sparsely scattered.

Core cutter (238 grams): Mud, olive gray (5Y 3/2); volcanic ash common; glauconite sparsely scattered.

PC 1578-28 Core catcher (277 grams): Mud, olive gray (5Y 3/2); volcanic ash sparsely scattered; 14 mm subangular pebble.

Core cutter (224 grams): Mud, olive gray (5Y 3/2); volcanic ash and glauconite sparsely scattered; 14 mm angular pebble.

Bag sample labeled "below core cutter" (46 grams): Mud, olive gray (5Y 3/2); volcanic ash common; glauconite sparsely scattered.

PC 1578-29 Core catcher (318 grams): Sandy mud, olive gray (5Y 3/2); volcanic ash common.

Core cutter (125 grams): Sandy mud, olive gray (5Y 3/2); volcanic ash common; pebbles (2-4 mm) sparsely scattered.

PC 1578-30 Core catcher (197 grams): Sandy mud, olive gray (5Y 3/2); volcanic ash common; pebbles (2-4 mm) sparsely scattered.

Core cutter (290 grams): Mud, olive gray (5Y 3/2); volcanic ash sparsely scattered; pebbles (2-4 mm) sparsely scattered.

smear slide:

Quartz	25	Volcanic glass	3
Feldspar	<1	Glauconite	<1
Mica	1	Diatoms	<<1
Heavy minerals	5	Sponge spicules	<<1
Clay	66		

Bag sample labeled "below core cutter" (147 grams): Igneous rock fragments, greenish gray (5G 6/1).

PC 1578-31 Core catcher (18 grams): Muddy sand, medium gray (N5); rock fragments (2-4 mm) common; glauconite sparsely scattered.

Core cutter (13 grams): Muddy sand, medium gray (N5); rock fragments (2-4 mm) common; glauconite sparsely scattered.

PC 1578-32 Core cutter and catcher (12 grams): Coarse sand, olive gray (5Y 3/2); glauconite sparsely scattered. NOTE: fine material may have been washed out of cutter and catcher sample during core recovery. Cutter and catcher sediments are in one bag.

PC 1578-33 Core catcher (112 grams): Mud, olive gray (5Y 3/2); volcanic ash sparsely scattered.

Core cutter (80 grams): Mud, olive gray (5Y 3/2); volcanic ash sparsely scattered; 6 mm subangular pebble.

PC 1578-34 Core catcher (221 grams): Mud, olive gray (5Y 3/2); volcanic ash sparsely scattered.

PC 1578-35 Core catcher (206 grams): Mud, olive gray (5Y 3/2); volcanic ash common; angular pebbles up to 10 mm sparsely scattered.

Core cutter (148 grams): Mud, olive gray (5Y 3/2); volcanic ash and glauconite sparsely scattered; angular pebbles up to 5 mm sparsely scattered.

PC 1578-36 Core catcher (60 grams): Sandy mud, olive gray (5Y 3/2); volcanic ash sparsely scattered; pebbles (2-4 mm) common.

PC 1578-37 Core catcher (108 grams): Mud, moderate olive brown (5Y 4/4); volcanic ash sparsely scattered.

Core cutter (155 grams): Mud, moderate olive brown (5Y 4/4).

PC 1578-39 Core catcher (304 grams): Pelagic clay, light olive gray (5Y 5/2); volcanic ash sparsely scattered; micro-manganese nodules common.

Core cutter (112 grams): Pelagic clay, light olive gray (5Y 5/2); volcanic ash sparsely scattered; micro-manganese nodules common.

PC 1578-40 Core catcher (129 grams): Pelagic clay, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

PC 1578-41 Core catcher (86 grams): Mud, light olive gray (5Y 5/2); micro-manganese nodules and volcanic ash sparsely scattered.

PC 1578-43 Bag sample labeled "bottom of core" (23 grams): Sand, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

PC 1578-44 Core cutter and catcher (26 grams): Sand, light olive gray 5Y 5/2); volcanic ash sparsely scattered. NOTE: cutter and catcher sediments are in one bag.

PC 1578-45 Core cutter (10 grams): Sand, light olive gray (5Y 5/2). NOTE: fine material was probably washed out during core recovery.

PC 1578-47 Core catcher (150 grams): Pelagic clay, light olive gray (5Y 5/2).

Core cutter (127 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered.

PC 1578-47A Core catcher (118 grams): Pelagic clay, light olive gray (5Y 5/2).

Core cutter (107 grams); Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules common.

PC 1578-48 Core catcher (115 grams): Pelagic clay, light olive gray (5Y 5/2).

Core cutter (68 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered.

PC 1578-49 Core catcher (75 grams): Pelagic clay, light olive gray (5Y 5/2).

Core cutter (116 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered.

PC 1578-50 Bag sample labeled "barrel base" (185 grams): Silt, light olive gray (5Y 5/2).

Core cutter and catcher (182 grams): Silt, light olive gray (5Y 5/2). NOTE: cutter and catcher sediments are in one bag.

PC 1578-51 Total core recovery (32 grams): Pelagic clay, light olive gray (5Y 5/2). NOTE: deck-log does not indicate whether sediment was recovered from core catcher or core cutter.

smear slide:

Quartz	30	Volcanic glass	1
Feldspar	<1	Micro-Mn nodules	<<1
Heavy minerals	4	Diatoms	<<1
Clay	65		

PC 1578-52 Core catcher (150 grams): Pelagic clay, light olive gray (5Y 5/2).

Core cutter (171 grams): Pelagic clay, light olive gray (5Y 5/2).

PC 1578-53 Core catcher (41 grams; total core recovery): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules sparsely scattered.

smear slide:

Quartz	3	Volcanic glass	2
Feldspar	<1	Micro-Mn nodules	<1
Heavy minerals	2	Diatoms	<<1
Clay	93		

PC 1578-53A Core cutter (562 grams; total core recovery): Mud, light olive gray (5Y 5/2); volcanic ash common.

smear slide:

Quartz	40	Clay	51
Feldspar	1	Volcanic glass	3
Mica	<1	Diatoms	<1
Heavy minerals	5	Sponge spicules	<<1

PC 1578-54 Total core recovery (in bag labeled "above core catcher"; 597 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules and volcanic ash sparsely scattered.

smear slide:

Quartz	18	Clay	75
Feldspar	1	Volcanic glass	3
Mica	1	Glauconite	<1
Heavy minerals	2		

Core cutter and catcher (333 grams): Pelagic clay, light olive gray (5Y 5/2); volcanic ash common. NOTE: cutter and catcher sediments are in one bag.

PC 1578-54A Total core recovery contained in three bags. Deck-log notation indicates that coring apparatus did trigger, that the core barrel was bent, and that the corer apparently experienced a "double hit" on the sea floor. Thus, the sediment may be stratigraphically meaningless. Descriptions of the bagged sediments are as follows:

Bag, 0-10 cm (516 grams): Pelagic clay, light olive gray (5Y 5/2): volcanic ash sparsely scattered.

smear slide:

Quartz	20	Clay	75
Feldspar	2	Volcanic glass	1
Mica	<1	Glauconite	<<1
Heavy minerals	2	Diatoms	<<1

Bag, 10-20 cm (247 grams): Pelagic clay, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

smear slide:

Quartz	18	Volcanic glass	2
Feldspar	2	Glauconite	<<1
Mica	1	Diatoms	<<1
Heavy minerals	3	Sponge spicules	<<1
Clay	74		

Cutter and catcher (376 grams): Pelagic clay, light olive gray (5Y 5/2); micro-manganese nodules and volcanic ash sparsely scattered. NOTE: cutter and catcher sediments are in one bag.

PC 1578-56 Core cutter (153 grams): Pelagic clay, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

Core catcher (143 grams): Pelagic clay, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

PC 1578-59 Core catcher (262 grams): Pelagic clay, olive gray (5Y 3/2); volcanic ash sparsely scattered.

Core cutter (169 grams): Pelagic clay, olive gray (5Y 3/2); volcanic ash sparsely scattered.

PC 1578-61 Core catcher (184 grams): Diatomaceous, sandy mud, dusky yellow (5Y 6/4); volcanic ash common.

Core cutter (111 grams): Diatomaceous, sandy mud, dusky yellow (5Y 6/4); volcanic ash common.

PC 1578-62 Core catcher (230 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

Core cutter (97 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

PC 1578-63 Core catcher (284 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered. NOTE: Deck-log states that core catcher sediment was bagged together with 2 cm of sediment above the core catcher.

Core cutter (141 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

PC 1578-64 Core catcher (202 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

Core cutter (104 grams): Diatomaceous mud, light olive gray (5Y 5/2); volcanic ash sparsely scattered.

Piston core bag samples described by Steve C. Jones.

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DIVISION OF POLAR PROGRAMS
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SPECIMEN AND CORE-SAMPLE DISTRIBUTION POLICY

The Division of Polar Programs supports collection and analysis of polar ice, sediment, and rock cores and of biological specimens. This statement establishes policy and procedures for distributing these materials to investigators for research use.

The State University of New York at Buffalo provides a storage facility and a curator for ice cores. The Florida State University provides a storage facility and a curator for sediment and rock cores. The Smithsonian Oceanographic Sorting Center provides a storage facility, a sorting service, and curators for biological specimens. The Division of Polar Programs funds operation of these facilities.

General provisions

The Foundation's objective is to assure (1) maximum availability of samples to qualified investigators, (2) analysis over a wide range of research disciplines without unnecessary duplication, and (3) prompt publication of results.

To obtain samples, an investigator first contacts the appropriate curator to determine that the needed material is available. The curator sends the investigator a form to be filled out or otherwise indicates the exact procedure to be followed. (For some specific types of samples see further instructions below.) The investigator sends the completed request for samples to the curator. The request must specify type and amount of samples required, purpose of research, and source of funding if funding is needed. The Division of Polar Programs or a designated advisory group authorizes distribution if warranted. Normally, a Division of Polar Programs grant for sample research automatically authorizes access to samples. Samples are not provided to investigators unless funding for the proposed research either is forthcoming or is not needed.

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Investigators are responsible for:

1. Prompt publication of significant results, with acknowledgment of the National Science Foundation as the source of materials.
2. Submittal of annual letter reports to the curator citing publications resulting from the research and enclosing copies of the publications. If the investigator has not published in a particular year, he or she sends the curator a letter describing, very briefly, his progress over the last year.
3. Provision of a copy of the letter noted in item 2, and two copies of all published results, to the appropriate program manager in the Division of Polar Programs—whether or not the investigator has a grant from the Division.
4. Notification to the curator, with a copy to the program manager, of any proposed change from tasks stated in the original request.
5. Return to the curator of the remainders of samples or any residue in good condition, unless otherwise authorized by the curator.

Investigators may not distribute residue samples to other investigators without prior approval. Investigators receiving residue samples become subject to the reporting procedures outlined in this section. The objective of this provision is not to restrict research; on the contrary, the objective is to insure that the best possible use is made of the samples and that the curator is fully informed as to their use and disposition.

The curation facility may charge investigators to recover freight or mailing expenses involved in filling requests. The curator will estimate charges, if required, before processing the request.

Sediment cores

Sediment cores and bottom samples have been taken from numerous locations in the southern ocean using the research ship *Eltanin* (now *Islas Orcadas)* and other ships. Published core logs are available from the curator of the Florida State University facility. Before publication of logs, preliminary logs generally are available.

Piston core material is apportioned as follows:

— 1/4 for permanent reference, to be held in the core facility for future investigation as authorized by the Division of Polar Programs
— 3/4 for research use

Gravity cores, trigger cores, grab samples, dredge

samples, and other samples are apportioned as follows:

— 1/3 for permanent reference, as above
— 2/3 for research use

Ice cores

Glacier ice cores have been taken at several locations in Antarctica and Greenland. Deep cores (to bedrock) were taken at Byrd Station and Camp Century. Several 100-meter and 400-meter cores have been obtained from other ice sheet locations. The curator of the ice core storage facility at the State University of New York at Buffalo keeps a record of core locations. A data bank exists for each core, and annual reports on use of core are available.

Dry Valley Drilling Project cores

Preliminary core descriptions prepared by site geologists have been published in *DVDP Bulletins*, available from the Department of Geology, Northern Illinois University, DeKalb, Illinois 60115. The Dry Valley Drilling Project staff at Northern Illinois University keeps a record of sample requests, indicating investigator and subjects of study, that is available on request. Frozen and unfrozen core samples are kept at the Florida State University facility. Igneous rock core, including basement and massive basalts, is at Northern Illinois University, but may be moved to Florida State.

Distribution is made after joint approval by the project sponsors: the Antarctic Division, Department of Scientific and Industrial Research, Christchurch, New Zealand; the Japan National Institute for Polar Research, Tokyo; and the Division of Polar Programs. To request samples, researchers use a form available from a DVDP coordinator in Japan, New Zealand, or the United States or from the curator at Florida State University. To aid in choosing samples for study, new researchers may examine cores at the Florida State or Northern Illinois University facilities.

Ross Ice Shelf Project marine sediment cores

RISP cores are logged visually in the field, then shipped to the Florida State facility. The logs are available from the curator at Florida State. Researchers wishing to obtain samples should get a request form from the project coordinator or from the curator at Florida State, then apply to the Division of Polar Programs as described earlier. Normally, core will not be available until after publication of the logs. However, investigators wishing to study ephemeral properties may request that the waiting period be waived. The curator keeps a record of sample requests, indicating investigators and subjects of study. The record is available on request.

Biological samples

To obtain samples/specimens from the Smithsonian Oceanographic Sorting Center, contact the Director, who will advise on availability of specimens and provide a request form. All requests are reviewed by an appropriate peer Advisory Committee established by SOSC. The DPP is advised of all requests and subsequent action. After study, specimens provided by SOSC must be handled as follows: holotypes and a representative series of nontype specimens should be deposited in the U.S. Museum of Natural History; remaining identified specimens may be deposited in other repositories on approval from SOSC curators.

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